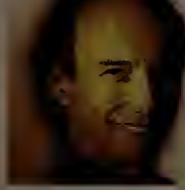

Java development
Applications enter the mainstream, **77**

Intranet-based training
Adoption levels expected to soar.
Supplement follows page 32

The skills hunt
Firms go to great lengths to woo IT talent, **72**

COMPUTERWORLD

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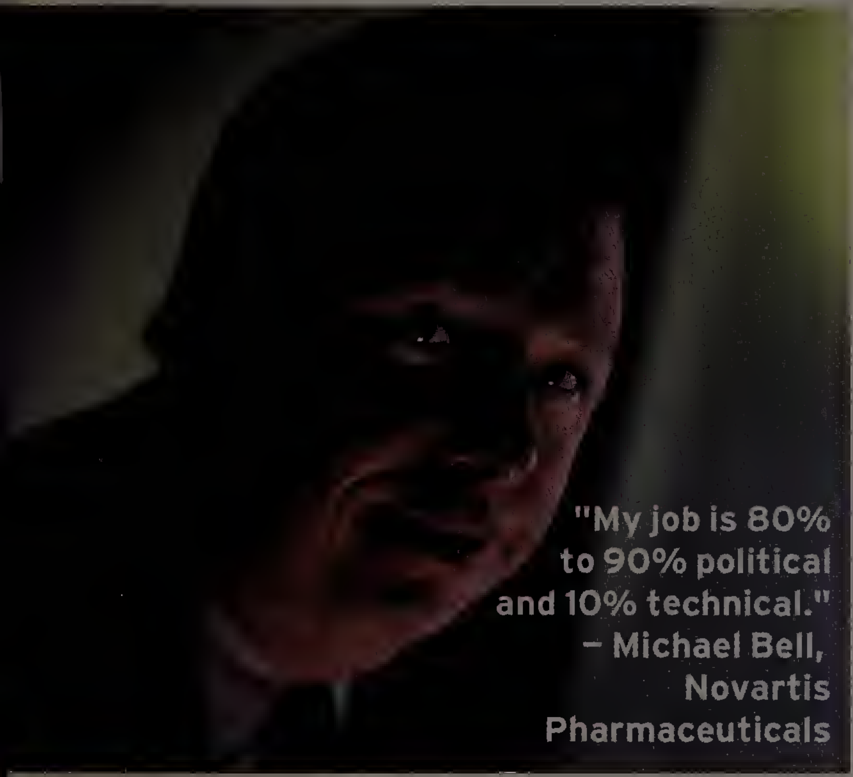


"My job is 80% to 90% political and 10% technical." – Michael Bell, Novartis Pharmaceuticals

TRACY KROLL

BRIDGE OVER TROUBLED WATERS

▸ *IS/business liaison job has political pitfalls*

By Barb Cole-Gomolski and Thomas Hoffman

When users start to give the IS department poor ratings, companies often appoint "relationship managers" to improve communications between the information systems group and the business units.

There's just one problem: That approach rarely works – or at least not the first time.

IS/Business, page 24

Appliance firm gives pricing system a whirl

By Randy Weston

When Frigidaire Co. drops freezer prices, a flurry of faxes and FedExes fly from Whirlpool Corp.'s offices in a fight to match those prices.

It's a chore for Whirlpool, which has been in this familiar fracas in the appliance business for 85 years with rivals such as Maytag Corp. and General Electric Corp.

But soon Whirlpool will be able to match competitors' pricing with a few key strokes, allowing the company to react quickly to market changes or launch a special promotion for a single product.

The $8.6 billion maker of stoves, dishwashers and other appliances is implementing a centralized pricing configuration system from Trilogy Development Group, Inc. in Austin, Texas.

Appliance firm, page 14

Lawsuit reveals training pitfalls

By Tim Ouellette

IN THE WAKE of a severe IT labor crunch, an Illinois lawsuit filed last week against a national supplier of computer training should serve as a red flag for IT managers.

The suit is especially chilling given that 80% of information technology training budgets is spent on outside training to quickly ramp up employee skills to fill open slots (see chart, page 107).

About $7 billion spent on computer training in the U.S. annually, according to Framing-

Lawsuit, page 107

Java tools cut cost, rev speed

JAVAONE TO SHOWCASE MATURING APP SUITE

By Sharon Gaudin
SAN FRANCISCO

CORPORATE DEVELOPERS SAY the Java tool suite that Sun Microsystems, Inc. will unveil this week will tackle the young language's maturity problems and hopefully let Java build business applications with greater ease and speed.

Sun will release the development and deployment suite here at JavaOne, the company's annual love fest for Java junkies. New technologies will be rolled out for Java — the language, the platform, the chip and the small-device operating system.

Jeff Kinz, an analyst at International Data Corp. in Framingham, Mass., said the suite is good news for business.

Java, page 106

Tackling license management

▸ *Industry groups pitch usage-based pricing plan*

By Jaikumar Vijayan

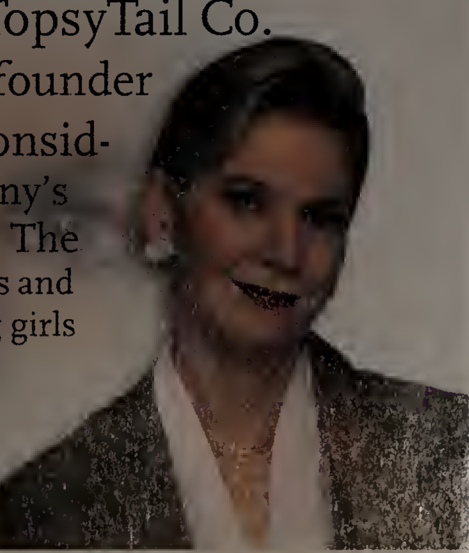
WITH THE BACKING of two powerful user and industry groups, a standard that addresses software licensing management issues could end what has long been a corporate nightmare.

The Guide, Inc. large system user group will deliver an early draft of a proposed standard to its members in Las Vegas this week. The proposal will be submitted this summer to Open Group, whose user and vendor members represent a combined technology budget of more than $55 billion worldwide.

If adopted, the standard could lead to tools that will help companies curb rising software costs through standard, multi-

License management, page 17

☞ Just about **everything gets outsourced** at TopsyTail Co. **except IS,** which founder **Tomima Edmark** considers one of her company's **most valuable assets.** The maker of hair accessories and **other products** for young girls farms out **manufacturing, customer service** and **advertising.**



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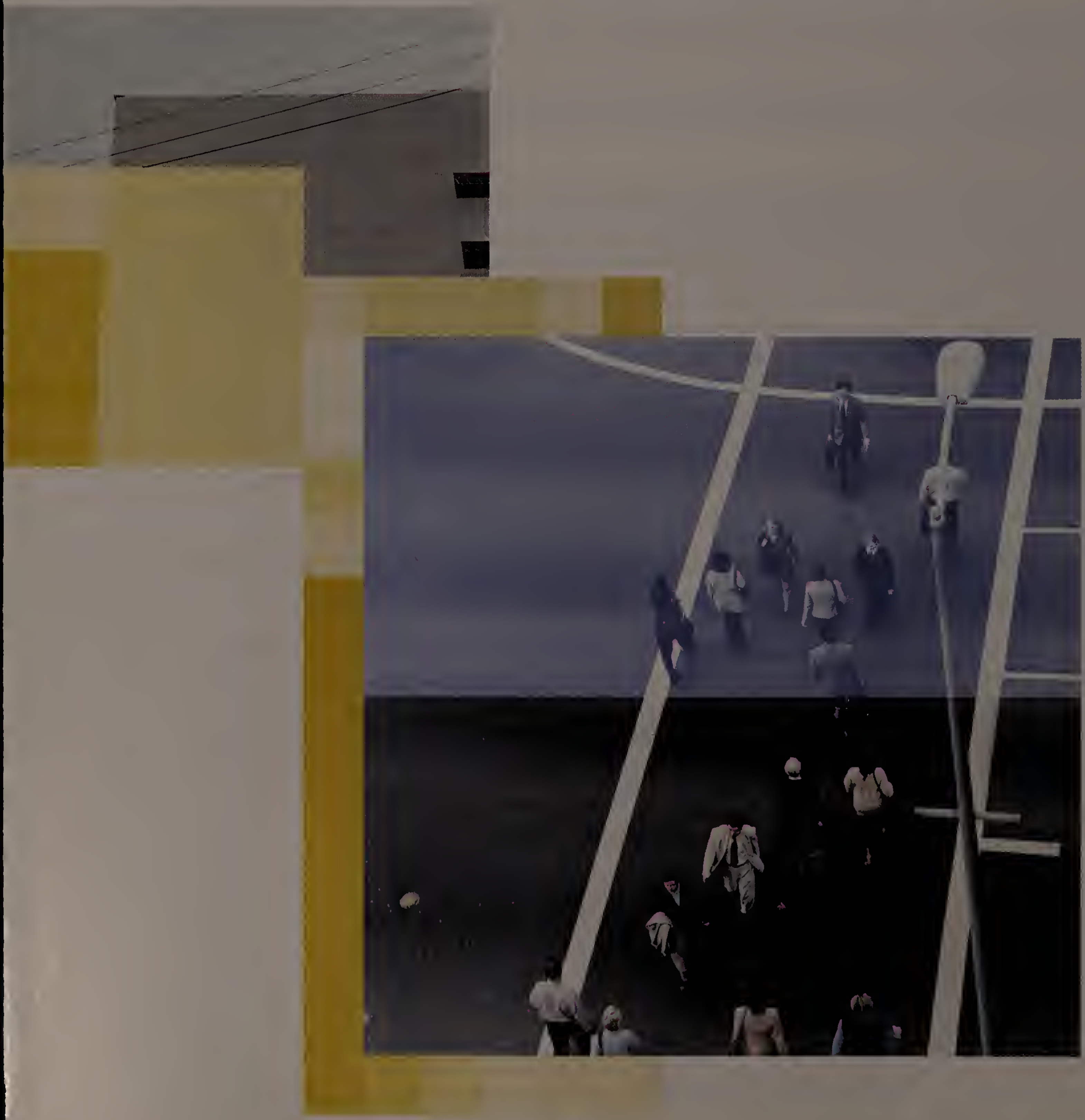
NEWSPAPER

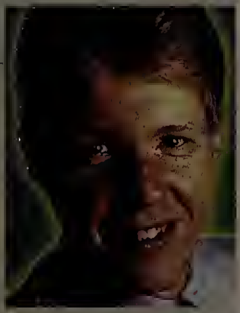
Digital_Nervous_System:
intelligent evolution



UP FRONT

Slap on the wrist

The wimpy sentence meted out to a teen-age hacker in Massachusetts last week demonstrates just how confused law enforcement officials still are about the dangers of computer crime.



The unnamed teen allegedly disabled an entire local telephone loop for six hours, disrupted emergency response services and all but shut down the control tower at a local airport. He also broke into a local drugstore's computers four times and copied customer records (see story, page 2).

As punishment for his dangerous acts, the kid's parents will pay a small fine, he'll do a little community service and, get this, *his modem will be taken away*. That's right, loss of baud for two years. And let that be a lesson to you!

Perhaps his parents will administer a much-deserved thrashing, too. But more likely, the kid will become a local celebrity ("Did you see? Our little Billy hacked the control tower!" "My, what a clever kid!"). He will certainly be doing security consulting before he leaves high school.

Computer break-ins by teen-agers are increasing at an alarming rate.

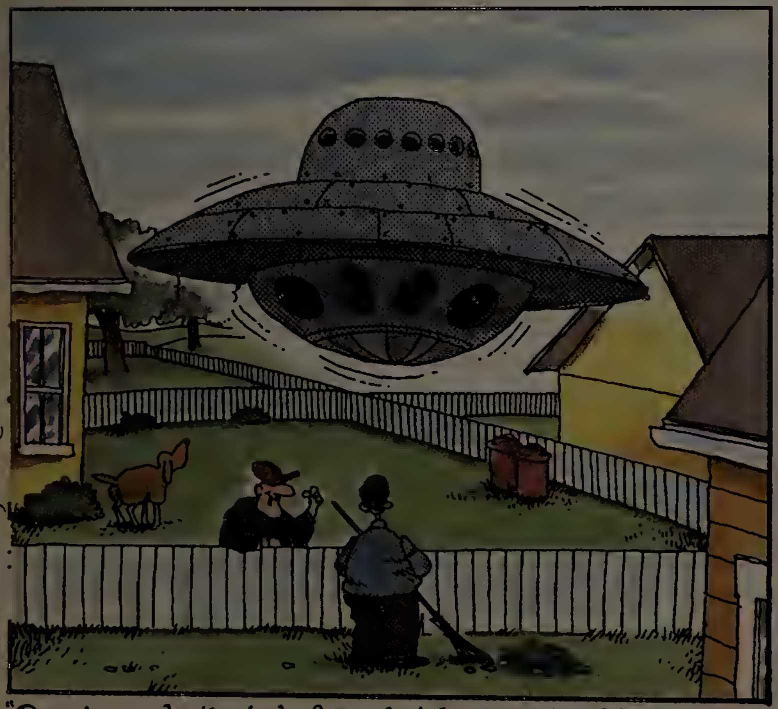
Twenty years after computer cracking and phone phreaking became a cultural phenomenon, hackers are still getting away with little more than a reprimand for committing some very destructive acts.

The message is disturbingly clear: If you commit vandalism with a computer, you're less accountable for your actions than if you throw a rock through a window or shinny up a telephone pole and cut the cable.

The frequency of computer break-ins by teen-agers is increasing at an alarming rate. And it will keep rising as long as law enforcement agencies continue to administer slaps on the wrist for criminal acts.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE



"Ronnie made the body from what he learned in Metal Shop, Sissy and Darlene's Home Ec. class helped them in fixing up the inside, and then all that anti-gravity stuff we picked up off the Web"

E-Mail Rich Tennant at the 5wave@tiac.net

Europe's skills shortage could hit IT pocketbooks in the U.S.

▸ *U.S. workers being pulled to man understaffed overseas operations*

By Tim Ouellette and Bob Wallace

WESTERN EUROPE's early struggles with its high-tech skills shortage could spell trouble for the recruitment efforts of skills-strapped U.S. companies.

As early as next month, the demand for information technology workers could outstrip supply on some major year 2000 projects in the U.K.

As a result, global firms may have to pull U.S. workers from their duties on the home front to man sparsely staffed operations overseas. At the same time, some European firms could be hunting for talent in the U.S.

DEJA VU IN EUROPE

Europe is in the early stages of its own skills shortage:

72% say there is a definite shortage

33% say they are suffering as a result

24% say retaining staff is a problem

49% say they need to do more to combat the problem

Base: 1,250 European IT and business executives

Source: NOP Research Group, London

"There's a flat-out shortage of qualified IS staff over here," said Earl Perkins, an IT manager shifted to London by Entergy Services, Inc. The $9.6 billion Gretna, La., utility bought London Electric Co. last year.

There are still 50 IT openings at London Electric, and Perkins' job back in Louisiana has yet to be filled.

That means an extra hit on the wallet for Entergy because it must pay skyrocketing fees to local contractors for immediate help while paying to bring people such as Perkins over from the States.

Estimates by Frankfurt-based European Information Technology Observatory place the shortage at between 100,000 and 200,000 workers, or about half of the 346,000 openings in the U.S. publicized by the Information Technology Association of America.

European firms may be even more desperate because they are struggling with the European currency conversion project on top of year 2000 work, said Martha Bennett, a London-based analyst at Boston's Giga Information Group. In April, she predicted, there will be no more workers available in the U.K. to staff those projects.

Ironically, Congress is deciding whether to increase the number of temporary visas given to foreign IT workers entering the U.S. [CW, March 2].

The reason for the tight market: Western European firms are building more strategic information systems, following the lead of U.S. businesses, said Dominique Black, CEO of Advanced Technology Staffing, a technical recruiting firm in Redwood Shores, Calif.

American technology managers, who have already gone through the process in the U.S., are especially attractive hires, said Reynold Lewke, a principal in the Palo Alto, Calif., office of Egon Zehnder International. For example, half of the firm's U.K. clients wanted to see U.S. candidates when hunting for new chief information officers.

Other U.S. workers could also find themselves overseas — brought over to run their company's global operations.

That is what happened to Chuck Rush, a global network architect at McDonald's Corp. After months of constant shuttling between the U.S. and Europe to build the $33.6 billion fast-food giant's European frame-relay network, he agreed with managers that a two-year stay in London was in order.

And because his wife works on McDonald's global electronic-mail efforts and could do that job from London, the decision was easier.

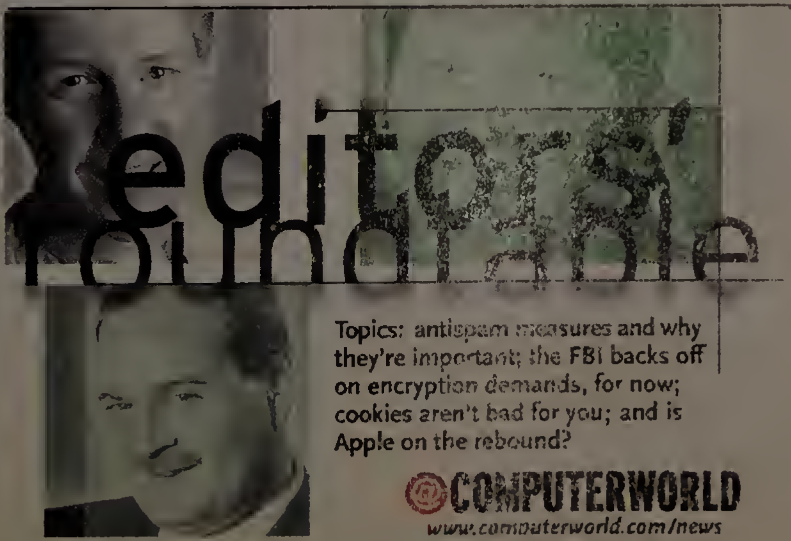
"International recruiting is not usually cost-effective, and now it costs us more to bring workers over."

– Alex Godun, Reohr Group

"The market demand for telecom people [overseas] is so good that there just aren't enough people to fill all the available jobs," Rush said.

Salaries are rising to U.S. levels as a result. For example, a Unix software engineer in the U.K. could make about $56,000 and get a car in the bargain, compared with a $66,700 Unix client/server project manager salary reported in *Computerworld*'s U.S. salary survey [Sept. 2, 1997]. Similarly, network administrators can get $45,000 in the U.K., compared with $47,400 in the U.S.

The increasing European salaries also affect U.S. companies trying to bring workers to the U.S. "The prices IT workers are asking for [in Western Europe] are at a premium right now," said Alex Godun, a recruiter at Reohr Group, Inc. in Wayne, Pa. "International recruiting is not usually cost-effective, and now it costs us more to bring workers over." ☐



Topics: antispam measures and why they're important; the FBI backs off on encryption demands, for now; cookies aren't bad for you; and is Apple on the rebound?

COMPUTERWORLD
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What is a Digital_Nervous_System?

In the beginning, you had to figure out how to make a bunch of disparate pieces work together.

That was the fun and the challenge and the job. Making parts work together. Making technology work.

That's what has always intrigued and challenged us, too. Just a few years ago, it was a breakthrough to be able to drop spreadsheet figures into a Word document. Now, with the explosion of the Internet and advances in chip speed and software functionality, it's things like accessing real-time figures in a database from a laptop thousands of miles away. Or doing collaborative work across three countries via an intranet.

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With a Digital_Nervous_System, the best thinking can happen at all levels. Data becomes knowledge. And knowledge becomes an advantage.

A Digital_Nervous_System relies on distributed PCs and integrated software to make information flow more rich, rapid and accurate. It helps everyone act faster and make more informed decisions. It prepares your company to react to unplanned events. It helps close the gap between your company and its customers. And it lets people focus on business, not technology.

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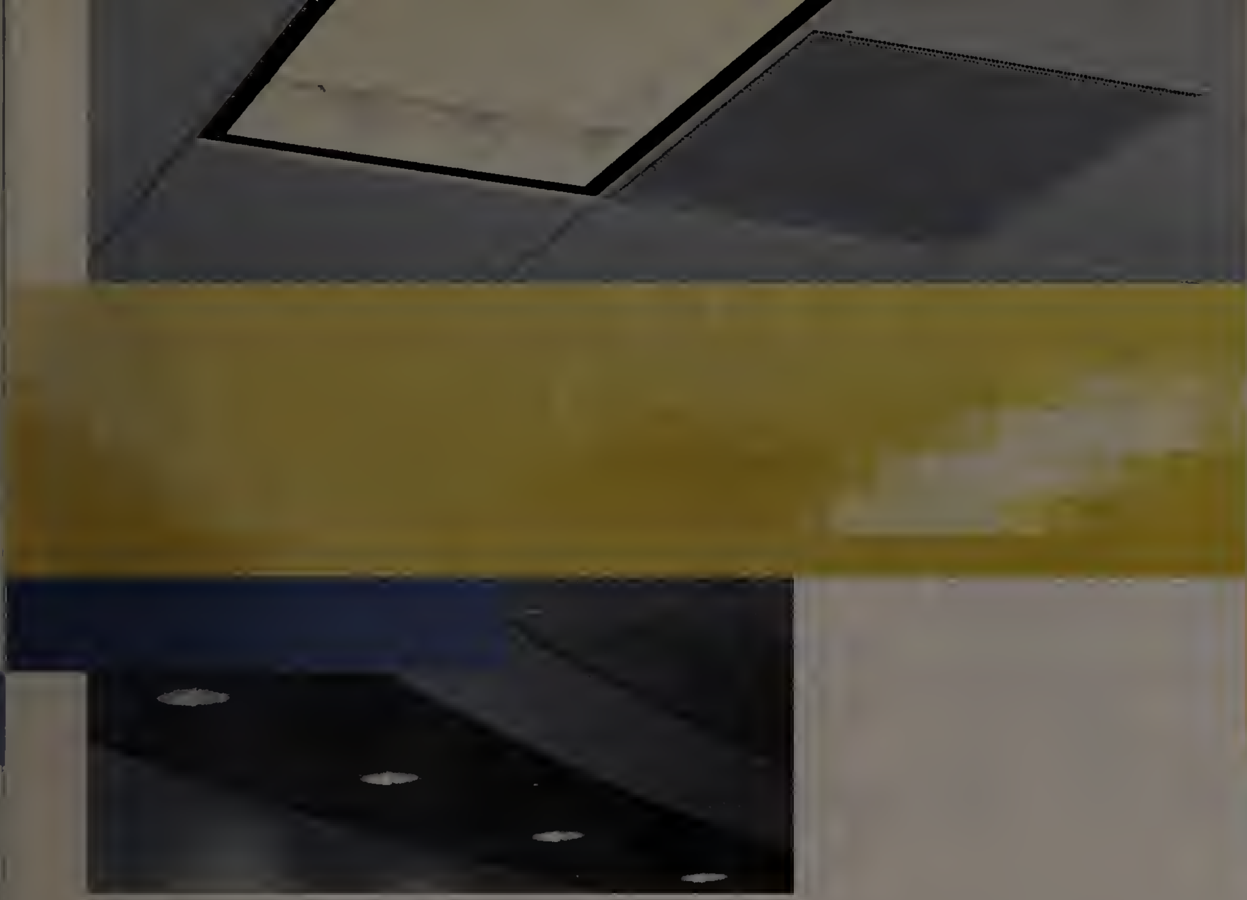

What's in a Digital_Nervous_System? Up-to-date PCs. Universal e-mail (encompassing overseas offices, clients and vendors). Common productivity software (word processors, spreadsheets, etc.). Business-specific applications (either off-the-shelf or custom-built). And integration with the Internet.

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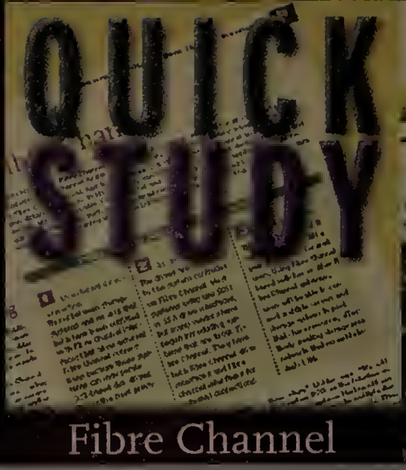
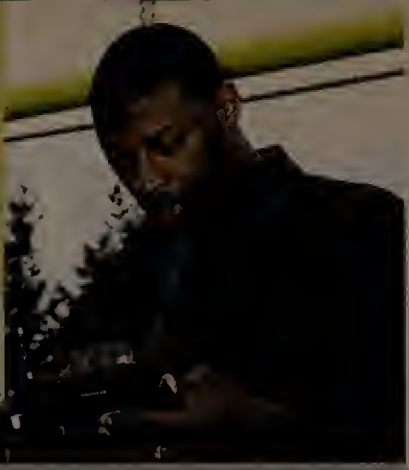
Advanced Computing Lab's Andrew White: A crash supercomputing project yielded surprise benefits. **In Depth, page 83**



Once Fibre Channel matures, it promises to go beyond the speed and distance of SCSI. **QuickStudy, page 33**



The New York Jets' Carl Banks tackles scouting reports with his handheld. **Servers & PCs, page 67**

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Security pros: Hacking penalties too lenient

▸ *Some decry Massachusetts plea bargain*

By Matt Hamblen

PENALTIES FOR convicted teen-age hackers need to be stricter in order to act as a deterrent to others, computer security professionals said last week.

They made their comments after a plea bargain was announced with a teen-age hacker who disrupted communications at an air-traffic control tower in Worcester, Mass.

"I think more strict sentences are called for, but education is important, too," said Henry Moreno, an officer at the Information Systems Security Association (ISSA) in Glenview, Ill. The ISSA has an in-school program that teaches kids about proper Internet behavior.

Donald Stern, U.S. attorney for Massachusetts, announced the plea agreement for the unnamed teen that includes two years' probation. During that time, the teen-ager may not possess or use a modem or other means to access a computer. The plea bargain also calls for the teen to pay $5,000 in restitution to the telephone company and complete 250 hours of community service.

'WE WILL PROSECUTE'

Stern made it clear that federal officials will investigate and prosecute juvenile hackers. "Computer and telephone networks are at the heart of vital services provided by the government and private industry," Stern said.

"They are not toys for the entertainment of teen-agers," he added. "Hacking a computer or telephone network can create a tremendous risk to the public, and we will prosecute juvenile hackers in appropriate cases such as this one."

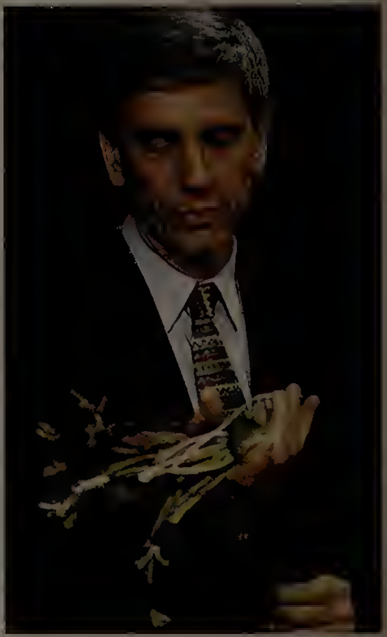
Some security professionals said the plea bargain seemed too lenient.

"That sentence sounds like a slap in the face of security managers at companies who are working so hard to protect our systems," said Patricia A. Gilmore, president of the ISSA and a security manager at a company in San Francisco.

Rather than 250 hours of community service, the teen should be required to work in a company that is trying to eradicate viruses, she said. "And that restriction on modems is totally ridiculous," she said, because it would be impossible to monitor and enforce.

But analyst Philip Carden at Renaissance Worldwide, Inc. in Newton, Mass., said the plea agreement, which is pending approval by a judge, is "probably strict enough if there's no obvious evidence of malicious intent."

A spokeswoman for the prosecutor's office said the teen knew he was accessing the local phone system owned by Nynex in New York, now Bell Atlantic, but didn't know his actions would cut communications at the airport. Air-traffic controllers were forced to use limited backup systems on March 10, 1997, for six hours.



THE ASSOCIATED PRESS

U.S. Attorney Donald Stern, displaying telephone wires, announces a plea bargain reached with a teen-age hacker in Massachusetts

Carden said such hacking examples "serve a useful function" in warning security workers, companies and the government to make systems more impenetrable. Stern said Bell Atlantic and other phone companies have created safer systems as a result of the investigation.

Also last week, an 18-year-old Israeli man was arrested for hacking in to U.S. military computers. "Rather than worrying about what punishment to bring against the Israeli, the Department of Defense has a much larger problem of security to worry about," Carden said. ☐

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Users snub plug-ins; too much hassle

▸ *Low interest has Web sites pulling the 'plugs'*

By Sharon Machlis

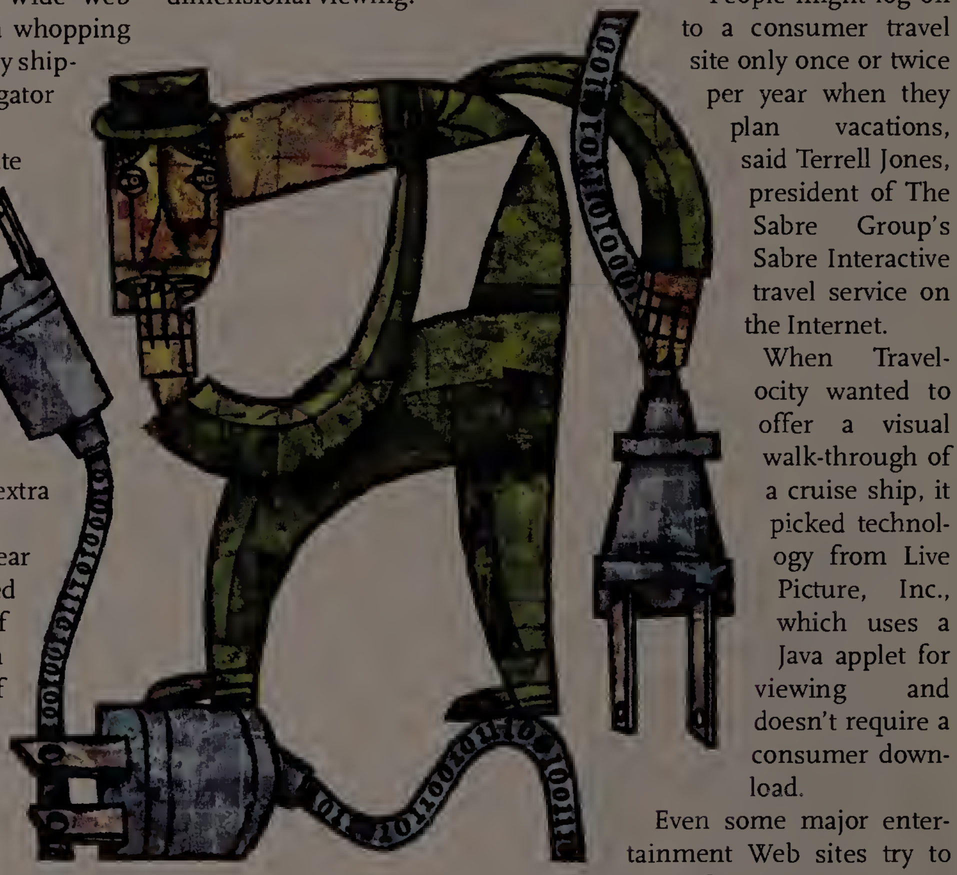
GO TO Netscape Communications Corp.'s World Wide Web site, and you'll see a whopping 176 plug-ins currently shipping for its Navigator browser.

But many Web site designers will tell you that, regardless of the nifty things they could do with plug-ins, consumers won't bother with the hassle of downloading extra software.

"Within the past year or so, we've shied away from the use of plug-ins," said Kevin Mason, director of technology at Chicago-based Eagle River Interactive, which recently helped design the Hyatt Hotel Corp. Web site.

The problem isn't just the time needed for users to get the add-ins, Mason said, but also setting up and configuring them. "What you wind up with on your system is plug-in hell."

Plug-ins can offer richer Web content, such as high-quality sound and video or three-dimensional viewing.


RICHARD DOWNS

So for corporate sites, the use of plug-ins depends in part on whether the company expects a lot of Web-savvy technophiles who crave a high-end experience or aims more at the general surfing public.

Another factor is whether the Web site will get a lot of repeat visits, in which case users might be willing to download the software.

People might log on to a consumer travel site only once or twice per year when they plan vacations, said Terrell Jones, president of The Sabre Group's Sabre Interactive travel service on the Internet.

When Travelocity wanted to offer a visual walk-through of a cruise ship, it picked technology from Live Picture, Inc., which uses a Java applet for viewing and doesn't require a consumer download.

Even some major entertainment Web sites try to avoid features that require plug-ins.

"We're pretty interested in making the user barrier to entry as low as possible," said Roger Smith, creative director at Sony Online Ventures, Inc. in New York. "But there are certain things you can't get around. . . . I think it's a necessary evil sometimes."

Only a few interactive areas of Station@sony.com use a plug-in such as Shockwave.

There is near-unanimous agreement that RealNetworks, Inc.'s RealPlayer audio/video software has crossed over from plug-in to mainstream application, and most Web sites expect surfers to have it.

Kokopelli's Glen Lipka: "It was too difficult to install the plug-in"

After that, however, opinions are divided: Some Web executives said that Shockwave and Flash, both from Macromedia, Inc., are fairly mainstream, but others still consider them an extra.

MAKING THINGS DIFFICULT

Using plug-ins can complicate life for visitors and Web site developers alike.

Kokopelli New Media in New York tried to design a Web site for a Fortune 500 client that used a plug-in for a walk-through virtual store tour. However, the walk-through didn't work with Navigator 2.0 and 3.0, said Glen Lipka, a founding partner. "It was too difficult to install the plug-in," he said.

If a company designs a Web site that requires Shockwave or Flash for viewing, it must create a second version for users without that technology, Lipka said. "It's not worth the money unless you know your target audience is clamoring to get your content," he said.

The popular news site MSNBC, a joint venture of Microsoft Corp. and National Broadcasting Corp., is more inclined to use extra software.

"If you've got repeat visitors like we do at MSNBC, I think a plug-in is a real advantage," said John Nicol, director of technology at MSNBC. By off-loading some functions from the server to the client, performance speeds up on subsequent visits to the site.

MSNBC has developed its own free software for personalized news alerts, for instance, that has been downloaded by the "tens of thousands," Nicol said.

Groups that create content at Starwave Corp. in Seattle, though, have been barred from relying on plug-ins at all, said President and Chief Technical Officer Patrick Naughton.

"People can't install plug-ins," Naughton said. "It's not smooth enough, although it's better than it was." ☐

Microsoft building tools to assist disk imaging

▸ *Clones for Win 98, NT 5.0; not Win 95, NT 4.0*

By Nancy Dillon

MICROSOFT CORP. is finally loosening the reins on users who see disk imaging — known as cloning — as a faster way to replicate workstations.

The Redmond, Wash.-based company last week confirmed that it is building software tools that will let users incorporate disk cloning in their Windows 98 and Windows NT Workstation 5.0 deployments. Microsoft still frowns on cloning for Windows 95 and Windows NT 4.0.

Analysts said the cloning reversal makes sense because Microsoft needs help persuading administrators with large installations of Windows 3.x to upgrade.

"For companies that think successfully upgrading lots of users to Windows 98 or NT might be akin to winning the lottery, cloning products are a possible answer," said Chris Le Tocq, an analyst at Dataquest in San Jose, Calif.

Cloning uses snapshot imaging to copy the operating systems, programs and data from one hard disk to another in a single repeatable procedure.

Shannon Perdue, a Windows product manager, said the upcoming tools won't change Microsoft's rule that technical support isn't available to Windows NT Workstation 4.0 users who have cloned systems.

Neither Windows 95 nor NT Workstation 4.0 was designed to be cloned, and concerns about hardware compatibility and duplication of system ID numbers remain, Perdue said.

But Microsoft wouldn't comment on whether it had postponed an announcement endorsing cloning software. Several third-party clone vendors told *Computerworld* that a last-minute bailout by Microsoft killed one announcement scheduled for the middle of this month.

For now at least, users who want to keep their Microsoft support agreements intact must endure the mind-numbing task of individually loading each system with Windows first and applications second.

OPTIONS AND HOPES

Users who don't mind possibly jeopardizing such agreements can check out several new third-party disk cloning products (see story at right).

Rob Spoor, a network analyst at McKesson Corp., a health care product distributor in San Francisco, said he understands the complexity of Windows upgrades. His group completes between six and 12 systems reconfigurations or upgrades per week. He said a full disk image seemed like the most reliable way to replicate NT Workstation because "it only takes one missing subdirectory to get something that won't launch."

Cloning utilities can result in significant time savings, said Ken Messer, assistant MIS manager at Allied Electronics, Inc. in Fort Worth, Texas.

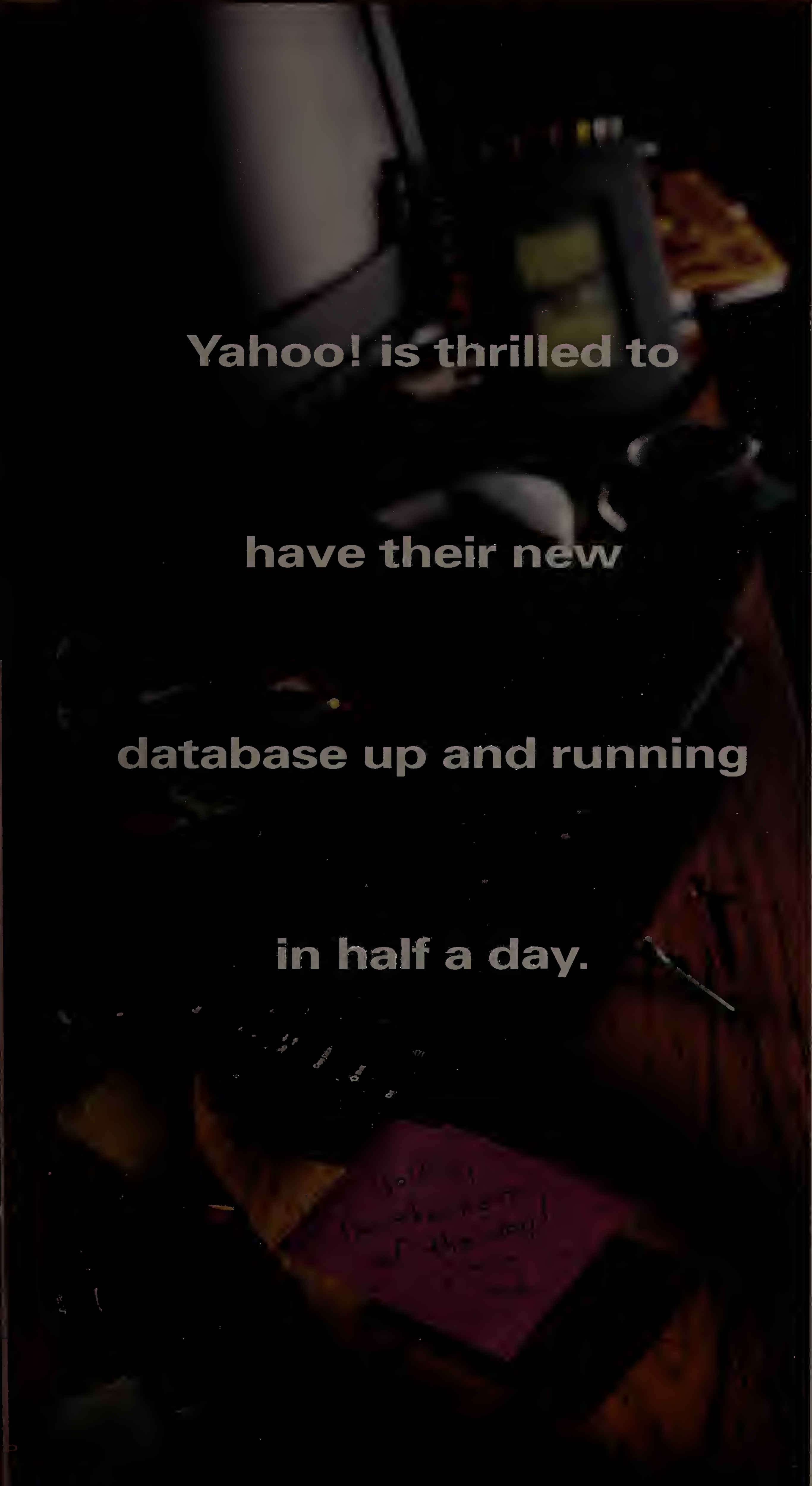
"With the cloning software we use, we can get one system the way we want it and then blow it onto others in a matter or minutes. Without it, it would take up to two hours per station," he said.

Messer uses the Ghost utility from Glendale, Wis.-based Binary Research International, Inc. to replicate Windows 95 machines. He said he is careful to keep the process legal by maintaining an adequate number of all software licenses. Otherwise, the missing Microsoft seal of approval doesn't mean much to him, he said. ☐

Third-party aid

Users of third-party cloning products can now try DiskClone Extra Strength, announced March 9, from Quarterdeck Corp. in Marina Del Rey, Calif.; DriveImage Professional 2.0, announced March 3, from PowerQuest Corp. in Orem, Utah; and ImageBlaster 3.0, due in mid-April, from KeyLabs, Inc. in Provo, Utah.

DiskClone and DriveImage will let users adjust partition sizes before copying. Both support image files up to 2G bytes. ImageBlaster and its competitor, Ghost, differ in that they offer network-broadcasting capabilities that can push disk-image files over a network to multiple prospective clients. —Nancy Dillon



Time is money. And when you get a mission-critical database on its feet before your coffee gets cold, there's cause for celebration. Yahoo!®, the leading search engine on the Web, uses Oracle8™ on NT to grow and manage the sales of its Web advertising. Now a global sales staff can access a 7 by 24 data warehouse, easily search through inventory data, and put together advertising packages for their customers. What's more, the scalability of Oracle8 on NT allows Yahoo! to grow their business dynamically, enabling success through rapid access to business information. There's more to shout about. Doug Smith from Yahoo! claims, "Oracle8 on NT gives us the performance, speed and scalability we need, and is the most cost-effective solution out there." The leader chose the leader, and the search was over. Find out how Oracle8 can put exclamation marks into your business.

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'Push' gets pulled onto intranets

By Carol Sliwa and Craig Stedman

PUSH ISN'T DEAD. The hyped Internet technology is quietly finding its niche among corporations that need to zap time-sensitive information to employees.

Just a year ago the market appeared limitless, as two or three dozen companies jockeyed for position, fueled by the success of PointCast, Inc. But the "push" hysteria faded away.

PointCast lost favor among many network administrators who didn't like the way it ate up bandwidth. Many thought users, already glutted with information, didn't need any more pushed to them, especially if it contained advertising. And any semblance of a consumer market is being addressed by Microsoft Corp. and Netscape Communications Corp..

Some push vendors went out of business or were acquired. But the roughly half-dozen survivors are helping companies solve business problems.

INTERNAL USES

Wheat First Union, a division of Wheat First Securities, Inc. in Richmond, Va., uses Wayfarer Communications, Inc.'s push software to deliver timely information to its brokers.

Wayfarer is eliminating its proprietary client technology in favor of displaying information in World Wide Web browsers. That's welcome news to companies whose users work all day in their browsers, said Pamela Edwards, a Web administrator at Wheat First.

"We're trying to give them the persistence of the message that voice does not have," she said. Important messages now are broadcast via desktop speakers. She said they may go to as many as 1,200 financial consultants, who might step away from their desks and miss a message.

In Colorado Springs, MCI Communications Corp.'s network operations group uses PointCast's software to send outage alerts to the 7,000 employees who run its long-distance network.

PointCast also points users to corporate information that otherwise might go unnoticed on MCI's sprawling intranet, which "is so big it makes it hard to find anything," said Peter Tsai, a senior technology engineer. MCI's business units initially had to share a single push channel. But now each MCI business unit can control its own feed "rather than just having a blanket channel that gives you everything," he said.

"Push is no longer a stand-alone product," said Alexis DePlanque, an analyst at Stamford, Conn.-based Meta Group, Inc.

PointCast is trolling for deals that will expand the range of corporate information available.

The Sunnyvale, Calif., company this week plans to announce agreements with Actuate Software Corp., a developer of reporting software in San Mateo, Calif., and Astound, Inc., a Sunnyvale maker of multimedia authoring tools for push channels.

Diffusion, Inc. in Mountain View, Calif., this spring will debut information delivery software tailored to vertical markets.

Church & Dwight Co., the maker of Arm & Hammer brand baking soda, expects to use Diffusion's software to push reports on daily sales and orders. The reports are generated by different analysis tools, "and we'd like to show a single face to our salespeople," said Mike Panesis, director of MIS at the Princeton, N.J., company.

The reports could simply be E-mailed, he said. But Church & Dwight was drawn to push by bells and whistles such as support for paging users and sending out other information.

Still, some remain wary.

Montgomery Securities, Inc. in San Francisco is testing a browser-based version of Actuate's reporting software that would let it use push channels to send financial data to other brokerages that pay Montgomery to clear their trades.

Even with a limited base of potential users, push technology raises bandwidth issues, said Fred Winograd, chief technology officer at Montgomery. "That's why I'm not running, I'm crawling [toward push]." □

THE MAJOR PUSH SURVIVORS

Vendor	Then	Now
BackWeb	Delivered news and software updates over the Internet	Focuses on intranets and extranets; builds applications using push technology
Diffusion	Developed and marketed products for all comers	Tailors software to three vertical markets
Marimba	Delivered software and Internet content to users	Distributes application software only
PointCast	Delivered news feeds to individual users	Pushes corporate data on intranets; focuses on multicasting and real-time alerts
Wayfarer	Used proprietary client to push information	Displays information in browser; targets packaged applications

New antispam sendmail has user interest

By Barb Cole-Gomolski

MESSAGING MANAGERS are viewing the commercial version of sendmail — a freeware E-mail router that delivers 75% of all Internet mail — as a possible alternative to the less-proven Internet mail gateways on the market.

The authors of sendmail last week announced a commercial venture, Sendmail, Inc., that will offer a business-friendly version of the software with graphical administration tools, antispam features and service and support. The freeware version will still be offered.

The antispam features in sendmail 8.9 could help stifle junk electronic mail. It also could provide a welcome option for companies unwilling to bet their business on shaky Internet gateways from Lotus Development Corp. or Microsoft Corp.

The commercial version of sendmail "will find a home here," said Marion Weiler, senior messaging technologist at Chevron Information Services, Inc. in San Ramon, Calif. Weiler said sendmail is used in pockets of the company today where Unix is the preferred platform, though most end users run Microsoft Exchange.

If the antispam features in sendmail 8.9, due in about five months, are strong enough, the product could be used to filter incoming Internet E-mail, she

Sendmail, page 16

CC:Mail users get relief

▸ *At last, Lotus provides migration tools to Notes*

By Barb Cole-Gomolski

LOTUS DEVELOPMENT CORP. is coming to the rescue of companies struggling with migrations from CC:Mail to Notes. But users said they could have used the help sooner.

The Cambridge, Mass.-based subsidiary of IBM will offer a 30% discount and upgraded migration tools to customers who move from the older CC:Mail system to Notes. Lotus also is readying a new CC:Mail client that can connect to either a CC:Mail back end or a Domino server, which will let administrators migrate clients and servers independent of one another.

Although there are still 14 million CC:Mail users, most companies are looking to dump it because older versions are not year 2000-compliant and Notes or other client/server electronic-mail systems are more reliable and easier to administer [CW, Feb. 9].

"That [new client] will make migrations easier because it lets you swap out the servers but gradually replace the client software," said Jonathan Lewis, a computer specialist at the National Park Service in Ventura, Calif. The agency is considering moving its 17,000 users from CC:Mail to Notes, he said.

However, users and analysts pointed out that the new client, dubbed CC:Mail Desktop for Windows Release 6.3, won't ship until the third quarter of this year. Existing CC:Mail customers will get the client for free, or they can upgrade to Notes for $25 per client, down from the usual $69 price.

READY ALREADY

"We would liked to have had these things six months ago," said Charlie Janssen, lead business analyst at Colorado Springs Utilities in Colorado Springs.

As part of the plan announced last week, Lotus added a new CC:Mail-to-Notes upgrade tool that supports the latest version of CC:Mail. Previously, the tool worked only with older versions of the E-mail system. As a result, Janssen had to move users who were on more current versions of CC:Mail back to older versions of the software first, and then move them to Notes, he said.

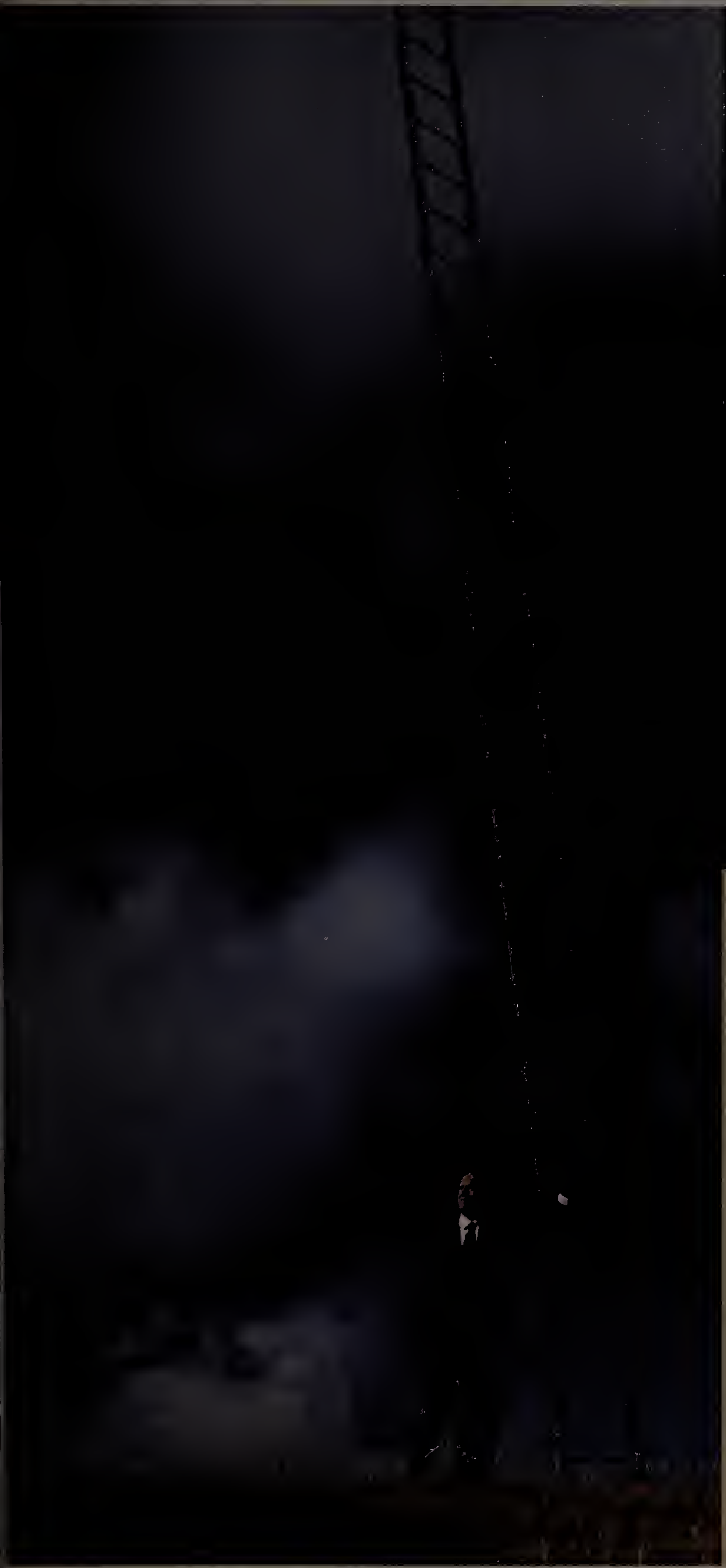
Gary Rowe, a principal at Rapport Communication in Atlanta, said Lotus' migration incentives would satisfy customers who are already seriously considering a move from CC:Mail to Notes. "But it's not enough for those users who are still happy with CC:Mail," Rowe said.

To woo CC:Mail devotees, Lotus might have to consider giving away the Notes client. Rowe said the CC:Mail base also is being courted by other companies, including Microsoft Corp. and Netscape Communications Corp. □

Lotus woos CC:Mailers

How Lotus is trying to entice CC:Mail sites to move to Notes

- 30% discount off price of Notes
- A new CC:Mail client that connects to Domino servers
- Upgraded migration tools that work with newer versions of CC:Mail



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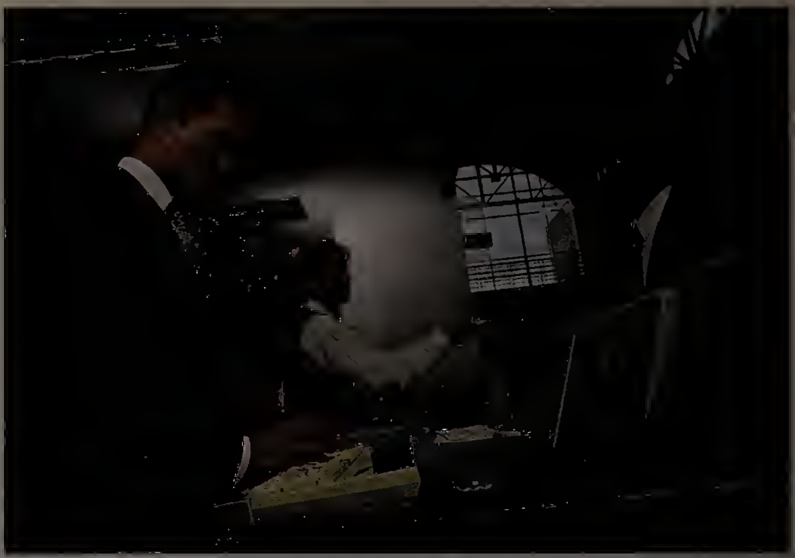
Protocol on the wing

Major airlines support initiative for move to IP networking

By Bob Wallace



Customers could see improved service at ticket counters as airlines move toward IP networking

TOP AIRLINES are supporting an industry initiative that could slash wide-area network costs and improve customer service by consolidating their disparate data networks.

An airline trade consortium and Cisco Systems, Inc. last week announced a plan to help airlines move to a single, open end-to-end Internet Protocol network without replacing their huge investment in dumb terminals and proprietary protocols.

The plan could help airlines save on WAN bandwidth charges by installing routers with new software that consolidates reservation, SNA and LAN networks into a single IP network.

ONE NETWORK

US Airways, Inc., for example, is moving from separate reservations and SNA networks to a single IP network.

"From a management perspective, this would allow us to simplify networking by handling fewer protocols," said Bob Crafts, senior director of business systems integration at US Airways based in Winston-Salem, N.C.

"There are fewer tools to monitor network traffic for proprietary protocols. Developers are focusing their attention and efforts on products for IP instead," he said.

Moving to IP also will enable the airlines that rely solely on dumb terminals to deploy PCs, adding new applications such as World Wide Web-based packages along the way, said Graham McLachlan, airline network solutions marketing manager at airline trade consortium Societe Internationale de Telecommunications Aeronautiques.

"Improving customer service is one of the biggest reasons why airlines are interested in IP," McLachlan said.

Many airlines currently use one network to let dumb terminals at ticket counters and travel agencies access host-based reservation systems, and a second network to let PCs at those same sites access other lifeblood applications and the Internet.

"We've got 40,000 travel agencies worldwide, of which a significant number still use dumb terminals and/or legacy airline protocols," said Don Wilkins, senior vice president of network services at The Sabre Group, a Fort Worth, Texas, travel reservations company.

Sabre services airlines and travel agents worldwide. It provides networking and data center outsourcing services to 10 airlines, including American Airlines, Inc.

MILLIONS IN SAVINGS

Although airline technologists wouldn't hazard a guess about how much they could save by consolidating parallel WANs, the savings could easily reach millions of dollars, said Daniel Briere, president of TeleChoice, Inc., a Verona, N.J.-based consultancy.

"They'd save on lines, equipment, support and maintenance," Briere said.

Savings would be higher for airlines with global networks because international lines cost far more, he added.

"The airline industry is definitely in need of this initiative, which has been quite a while coming," said Rod Stallings, director of computer and network services at Southwest Airlines, Inc. in Dallas. "We're in the process of moving to IP now because there's a myriad of benefits [to be realized]."

Proprietary protocols are extremely difficult to monitor, and they make network capacity planning next to impossible, he added. "We're burning WAN bandwidth with legacy protocols," he said.

Southwest began discussing with Cisco the need for the initiative about a year ago, Stallings said. □

Cisco supports proprietary systems

Cisco plans to support the 1960s-vintage proprietary reservations system protocols the airlines still use today as they gradually move to open IP networks.

Those protocols were developed primarily during the Kennedy administration and were made hardware-specific to provide the fastest response times.

One protocol was set for IBM mainframes and another for Unisys Corp. hosts.

In mid-June, Cisco will offer router software that lets its routers encapsulate the IBM-specific protocol in IP packets for transmission over WANs. Ninety days later, Cisco will begin shipping router software that can encapsulate the Unisys-specific protocol in the same fashion. Pricing for the software hasn't been set.

— Bob Wallace

Latest hydra beta's performance still falls short

Work-arounds available at Microsoft site

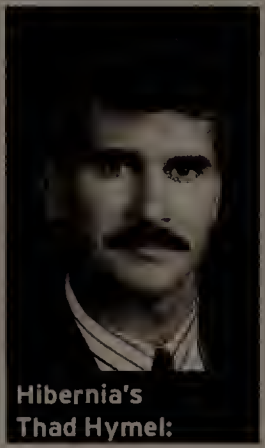
By Laura DiDio

USERS DEPLOYING the first commercial release of Microsoft's Hydra later this spring may find their efforts tripped up by missing functionality, limitations in the Windows NT 4.0 operating system and a lack of third-party support.

The initial release of Hydra, or Windows Terminal Server 1.0, is expected to force technology managers to expend a significant amount of time overcoming shortfalls in the thin client. Microsoft Corp. has some permanent work-arounds that are available on its World Wide Web site.

Ten beta testers last week said Hydra eventually will provide a solid base for a thin-client platform running a remote Windows application. But the second and final beta version of Hydra, which has been shipping for two weeks, still has some problems. They include the following:

- ▪The slow performance of Microsoft's Remote Data Protocol (RDP). It consumes too much bandwidth and transmits data much more slowly than Citrix Systems, Inc.'s comparable ICA remote access protocol. Microsoft pledged that it would fix RDP's performance in the Beta 1 release [CW, Feb. 16].
- ▪Difficulty managing and distributing user profile information, such as adding, copying or changing user accounts. That is because Windows NT 4.0 lacks Active Directory, which will ship as part of NT 5.0.
- ▪IBM's Network Station is equipped to handle multiuser applications; Hydra users will have have to tweak off-the-shelf Windows applications themselves.



Hibernia's Thad Hymel: Hydra has "poor throughput in the RDP protocol"

The most severe impediment in the current Hydra Beta 2 release is the continued slow performance of Microsoft's proprietary RDP, which some beta testers said is as much as 30% slower than ICA.

"Neither our users nor our systems department will tolerate the current poor throughput in the RDP protocol. They'd make us yank it out," said Thad Hymel, chief technologist at Hibernia National Bank in New Orleans.

John Frederiksen, Microsoft's group product manager for Hydra, denied there are any serious flaws in the final Hydra Beta 2.

"Our internal tests indicate that RDP is working well in Beta 2. But if users tell us performance is a problem, we will fine-tune RDP as needed so its performance is comparable to Citrix's ICA," Frederiksen said.

GOOD FIT

Hydra suits the needs of beta testers such as Chris Campbell, a programmer at American Floral Services, Inc. in Oklahoma City.

"For us, Hydra is perfect. Our users will be running just one order entry/accounting application called Rosebud that we built and tested ourselves," he said.

Other users expressed concern that management of the Windows thin clients will be problematic. Microsoft has several graphical user interface-based administration tools to simplify Hydra management, but the tools fall short of a distributed enterprise directory, said Stu Sjouwerman, vice president of Sunbelt Software, Inc., a consulting firm and Windows NT distributor in Clearwater, Fla.

"Until NT 5.0 ships, managing Hydra will be cumbersome," he said.

Frederiksen acknowledged that Microsoft is relying on users to build their own customized multiuser applications using Visual Basic and C++. He downplayed the dearth of support from independent software vendors. "There are a number of [vendors] testing it, but they haven't made any public statements," he said.

But two Microsoft third-party application distributors — Sunbelt Software and and JSI, Inc. in Alpharetta, Ga. — said the lack of software vendor support could hurt the product. "It's an indication that Hydra will appeal to a very limited niche market," Sjouwerman said. "We haven't heard much buzz about Hydra." □

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Bank sells homegrown Y2K tools for profit

By Julia King

IF YOU WANT A JOB DONE RIGHT, do it yourself. Even better, turn a profit by selling your work to outsiders.

None of this was in First National Bank of Omaha's original year 2000 plan. But that's pretty much how it worked out at the bank, which is now selling its homegrown year 2000 tools on the open market.

Like its commercial rivals, the bank's Y2KSolvr product automates the process of finding and flagging dates that must be changed in order to make a company's software programs millennium-compliant.

What makes the product unique — and highly efficient, experts said — is the way the tools track and preserve those changes even after new lines of code are added to a program. In the world of year 2000 fixes, that is known as clean management.

"The goal is to avoid anyone taking a fixed program, making a business change and breaking the program in the process," said Phil Murphy, an analyst at Giga Information Group and a former year 2000 project manager.

Clean management, Murphy said, "is where this tool shows great promise. I don't know of other tools on the mainframe side with this capability."

"It's a tool that doesn't just focus on getting a project done, but on keeping systems compliant," said Patti Swift, a manager at Productive Data Commercial Solutions, Inc., whose contract consultants use the tools on year 2000 conversion projects.

INGENUITY WHEN IT COUNTS

First National didn't set out to build, much less sell, a set of software tools, said Clayton Marsh, vice president of systems development at the bank. But that was before it had discovered error rates as high as 45% in the work of an outside contractor the bank had hired to perform a year 2000 assessment.

"We weren't pleased with the results or the reports they were generating, so we started a parallel assessment," flagging dates right in the source code rather than taking care of it in a separate report, Marsh explained. That later worked to significantly speed the process of fixing the dates, which were also tagged according to their function in a particular program.

Tagging the dates by function "allows you to sort the work by complexity and better plan how you remediate code," Marsh said. "Based on complexity, for instance, we'd know whether to give a particular job to a junior programmer or senior programmer."

First National's Clayton Marsh wasn't "pleased with the results or the reports" an outside contractor was generating

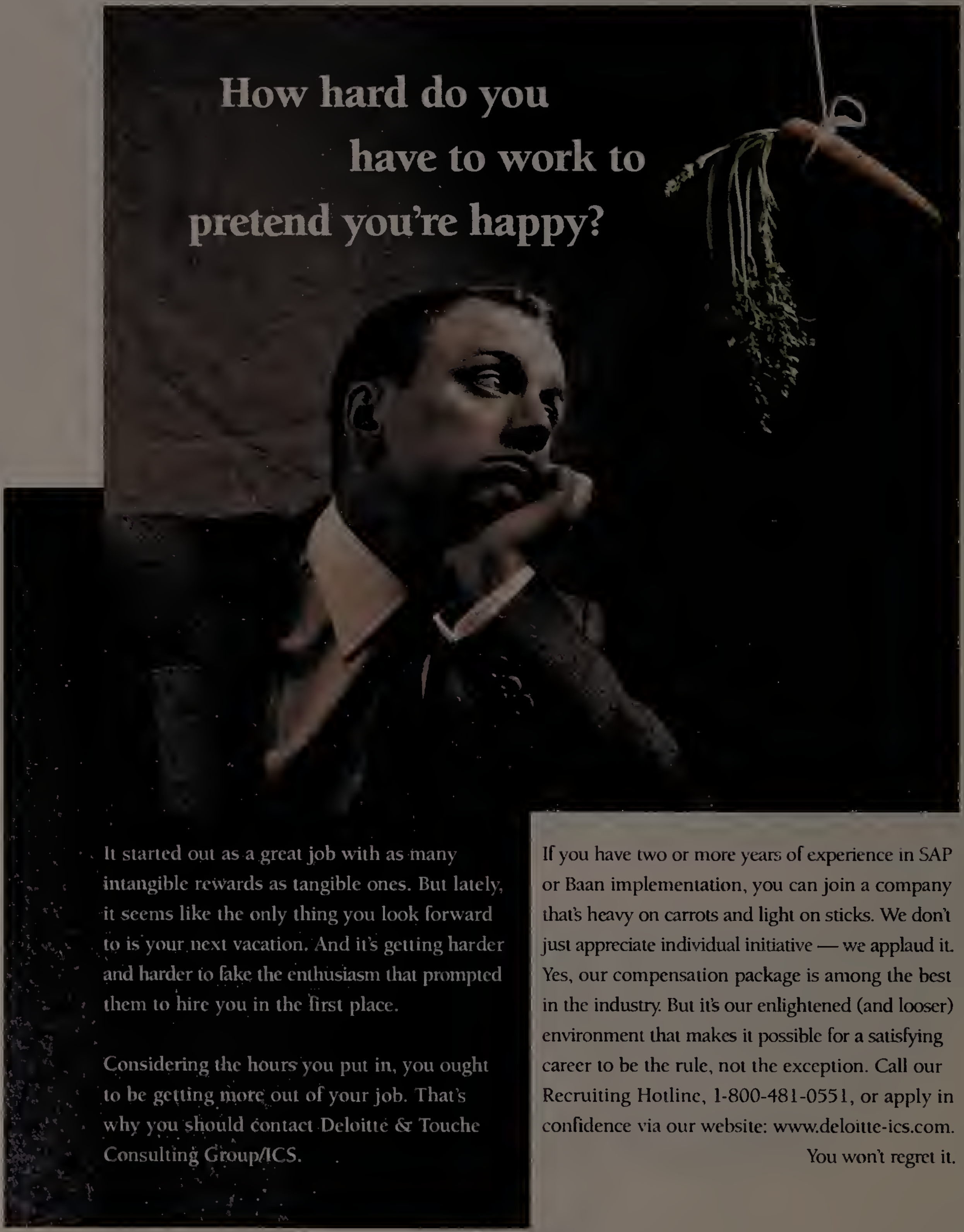
First National then put the renovation project out to bid, and Marsh said he didn't like the results that came back.

One consulting company projected that it would require some 43 programmers and seven managers 18 months to renovate the bank's 15 million lines of code.

Convinced that they could do better, Marsh and his team set out in 1996 to fix the code themselves and in the process developed Y2KSolvr.

In the end, it took 15 programmers using the homegrown tools just more than 10 months to renovate the bank's code.

With renovations now completed, the bank is setting up for full systems testing, Marsh said. □



It started out as a great job with as many intangible rewards as tangible ones. But lately, it seems like the only thing you look forward to is your next vacation. And it's getting harder and harder to fake the enthusiasm that prompted them to hire you in the first place.

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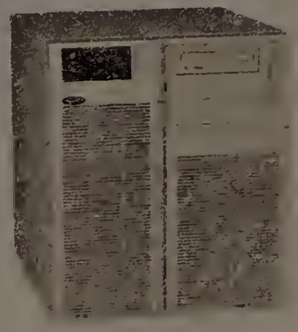

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FRANK HAYES

STEVE LEE says his customers have him over a barrel. “That makes me a little less comfortable,” he says. “But it's what customers want.”

Sound like Lee is in trouble? If he is, it's the kind of trouble you should be in, too.

Lee is a senior vice president at 21st Century Telecom Group in Chicago. The company is building a huge fiber-optic network to pump video, telephone, data and Internet services to more than 10,000 customers along Chicago's lakefront.

To keep that distributed network running smoothly, 21st Century's software developers built a Java application that provides a standard, easy-to-use front end for configuring, tracking and managing the net.

Then they did something that may sound a little crazy: They gave those management tools to large customers.

If you're cringing right about now, it's probably because you're a network manager, and you can guess where this is headed. See, most users are pretty much at the mercy of whoever provides their network. There may be service-level agreements that promise users certain amounts of network bandwidth and uptime — but good luck enforcing them. After all, it's the network provider that controls all the information about how well the network is doing.

Every time the tech wheel turns, users get a little more control.

But now 21st Century's customers don't have to trust their network provider. They can track uptime and bandwidth on their areas of the fiber network themselves. They also can raise merry hell when the network doesn't perform the way it's supposed to.

Which is why Lee feels as if his customers have him up against a wall. But uncomfortable or not, he's got the right idea — and he knows it.

Every time the technology wheel turns, users get a little more control. From mainframes to minicomputers to PCs to the Internet, users just keep getting more of a handle on the systems they use. You probably figured that out years back. Maybe it was 20 years ago when users smuggled in Apple IIs so they could use VisiCalc. Maybe it was a few years later when they began buying their own unauthorized software and writing their own spreadsheet macros. Maybe it was just recently when they started putting up Web sites on the Internet without so much as a by-your-leave from IS.

And though it may make you grind your teeth, that shift in control is a good thing, because so much is being demanded of technology in business today.

Technology is supposed to fine-tune every worker's efficiency, reinvent every business process and slash every cost. IS can't do all that, even with the full cooperation of users, which you'll never get. You can't possibly know enough about every worker's job, every business process and every cost to design, build and run systems that meet those expectations. But users know the business. In many ways, they *are* the business. You *need* them to take some control. They're the ones who know exactly what's important to the business. All you can do is make is an educated guess. So why not start *pushing* that control into users' hands?

Of course, there's no way of knowing exactly where that will lead. But your users might figure out for themselves the costs and trade-offs of “push” technology and badly designed Web sites and running their departments using PalmPilots. And you might end up being their technology partner — instead of somebody they'd like to put up against a wall.

And like Steve Lee, you may find only three things you can be sure of. Sometimes you'll feel as if your users have you over a barrel. You'll be a little less comfortable. And you'll find out for sure what your users want — and what your business needs. ☐

Hayes is Computerworld*'s staff columnist. His Internet address is frank_hayes@cw.com.*

SHORTS

HP to ship virtual Java clone

Hewlett-Packard Co. last week said it will ship a clone of the Java virtual machine technology and class libraries for the embedded-systems market. The Palo Alto, Calif.-based company said it will license the technology to other vendors at a much lower cost than Java owner Sun Microsystems, Inc. charges. HP's “clean room” version of the virtual machine is compliant with Sun's Java Virtual Machine and is targeted for use in low-end electronic devices and consumer appliances. Sources at Sun said HP, like several other vendors, essentially is cloning its byte code interpreter, an engine that runs the byte code and represents about 15% of the Java platform. Microsoft Corp., which is the first licensee, said it will use HP's virtual machine technology to integrate Java programming language support into its Windows CE operating environment.

Nasdaq, Amex to merge

Officials at the National Association of Securities Dealers (NASD) and the American Stock Exchange (Amex) approved a merger plan that calls for the NASD's Nasdaq Stock Market to invest $100 million in technology to handle increased trading traffic. The two exchanges will build a single trading system that lets electronic orders from around the world flow over Nasdaq's dealer network to Amex's trading posts in New York. The merger would combine the second- and third-largest stock markets in the U.S., representing more than 6,000 companies with a combined valuation in excess of $2 trillion.

Bill would limit 'net taxes

A proposal before Congress to impose a three-year moratorium on new Internet taxes gained the support last week of a coalition of state and local politicians. The legislation also would set up a commission to determine how individual states could tax electronic commerce. The National Governors' Association said it would back the latest version of the Internet Tax Freedom Act. That boosts chances of the bill's passage, observers said.

Judge out in DOJ case

A federal judge last week removed himself from hearing Microsoft's appeal in the antitrust case brought by the U.S. Department of Justice. U.S. Circuit Judge Laurence Silberman cited Microsoft stock holdings in a letter to attorneys involved in the case. Oral arguments are scheduled for April 21.

Bay expects lower results

Bay Networks, Inc. officials said the company's revenue for the third quarter will drop because of weaker-than-expected demand. The officials said the quarter ending March 28 will show a 10% dip in sales from the $645 million it recorded in the second quarter, although it is a rise from the $513 million reported in the third quarter a year ago. The Santa Clara, Calif.-based networking vendor also said it expects to take a $154 million charge related to its acquisitions of New Oak Communications, Inc. and NetStation Corp.

U.S. Robotics layoffs

3Com Corp. officials last week announced the company will lay off 380 workers at former U.S. Robotics sites in the Chicago area. 3Com also said former U.S. Robotics President John McCartney will resign for personal reasons. The layoff of 230 full-time workers and 150 temporary staffers is the result of streamlining the company's manufacturing operations, a 3Com spokeswoman said. 3Com, in Santa Clara, Calif., merged with U.S. Robotics early last year and announced the layoff of 800 U.S. Robotics workers worldwide last July.

Intel: 1-GHz chip on tap

By 2000, Intel Corp. processors could reach speeds higher than 1 GHz, company officials said at the CeBIT trade show in Hanover, Germany. Intel also demonstrated a 700-MHz Pentium II processor. The company said it would unveil 266-MHz Pentium IIs for laptops next month, and Pentium IIs for high-bandwidth workstations by midyear.

New Microsoft database virus

Antivirus maker Trend Micro Devices, Inc. said last week that it has discovered a new virus that infects Microsoft's low-end Access database. Access is part of the Microsoft Office desktop suite of applications. A Trend Micro spokesman said the new virus can spread to other systems but it doesn't destroy data. “Our security technicians are examining the code, and we expect to have a fix posted on our Web site this weekend,” a Microsoft spokesman said.

SHORT TAKES Microsoft spent $1.2 million lobbying Congress and the Clinton administration during the final six months of last year, nearly doubling its first-half spending, according to the Campaign Study Group in Springfield, Va. . . . **Microsoft** still plans to ship Windows 98, with full integration for Internet Explorer 4.0, on June 25 for about the same price ($89 retail) as the current Windows 95 operating system. At an OEM briefing last week, Microsoft also showcased new built-in management and troubleshooting utilities.

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Aetna learns from previous integration snafus

▸ *Insurer to go slow with New York Life purchase*

By Thomas Hoffman

TAKING A CUE from its troublesome integration of U.S. Healthcare, Inc.'s operations, Aetna, Inc. is planning a slow and deliberate systems transition following its $1.05 billion acquisition of New York Life Insurance Co.'s health care business last week.

Since Aetna bought U.S. Healthcare for $8.3 billion in 1996, Wall Street investors have been disappointed by weak earnings. Meanwhile, snafus caused by problems in merging claims processing systems have delayed payments to many doctors and caused headaches for health maintenance organization members.

Aetna "is still not out of the woods proving to [Wall Street] that they've taken care of all of their integration problems" with the U.S. Healthcare deal, said Jason Purpura, a health care analyst at D. A. Davidson & Co., a Great Falls, Mont.-based investment bank.

Aetna is taking a considerably more deliberate approach with its latest takeover target, NYLCare Health Plans, which the Hartford, Conn.-based insurer announced its intent to acquire last week.

Even though Aetna expects to close the NYLCare deal by the end of this summer, the company plans to gradually add NYLCare's 2.2 million members and systems to its base of 13.7 million health care customers, starting with smaller regions such as the Carolinas by 2000, said Richard L. Huber, Aetna's chairman and CEO.

"I have yet to see a [health care industry] acquisition that has gone smooth."

– Ira Zuckerman, analyst, Nutmeg Securities

To maintain quality service, Aetna intends to integrate smaller groups of customers first as it runs NYLCare's systems parallel with its own.

Some analysts praised Aetna's approach, but others raised red flags. Most health care insurers tend to assign codes to customer accounts. Aetna's challenge will be to keep those codes separated between those customers who have been integrated and those who haven't, said Ira Zuckerman, an analyst at Nutmeg Securities Ltd. in Westport, Conn.

John Brighton, Aetna's corporate chief information officer, expects the customer code transfer to go smoothly. "One of the things we learned [from the U.S. Healthcare integration] is how and when" to add member IDs to the existing systems "without disrupting service," Brighton said.

Others are more optimistic. NYLCare, with $3.1 billion in revenue last year, is the largest health maintenance organization in Texas, with 630,000 members. The unit also bolsters Aetna's presence in the Washington area, where NYLCare has 470,000 members.

Aetna "is being more cautious" about its integration plans with NYLCare, "and I think they're trying to learn from their past lessons" with U.S. Healthcare, said Marjorie Saint-Aime, an analyst at Goldis-Pittsburg Institutional Services in Garden City, N.Y. □

Whirlpool to try pricing systems

CONTINUED FROM COVER 1

Scheduled to go live in July, the pricing software will allow Whirlpool to cut by more than half the 110 days it now takes to reprice its entire product line of more than 2,000 models each quarter.

Most important, the application will give the Benton Harbor, Mich.-based company a centralized pricing structure. Previously, the company used separate pricing models and order entry systems for each Whirlpool division, from small appliances to large goods to spare parts.

Whirlpool's technology overhaul is necessary to prime Whirlpool for the dishwasher wars in years to come.

– Nick Heymann, analyst, Prudential Securities

"The big driver for all of this is to make Whirlpool easier to do business with," said Bill Hester, a senior information systems project manager at Whirlpool.

COMPETITIVE MARKET

According to Nick Heymann, an industry analyst at Prudential Securities, Inc. in New York, the appliance market is fiercely competitive, with Whirlpool leading the pack in front of General Electric in Louisville, Ky., and Maytag in North Newton, Iowa.

Combined, the three manufacturers own about 85% of the marketplace.

Companies such as Electrolux Corp., the maker of Frigidaire, and Raytheon Co., which makes the Amana brand, take the rest of the market share.

Heymann said Whirlpool's technology overhaul, which also includes implementing SAP AG's R/3 and a massive operational reorganization, is necessary to prime Whirlpool for the dishwasher wars in years to come.

It is also necessary as competitors such as General Electric undergo their own operational and information technology overhaul, he added. Heymann estimated that the entire IT overhaul will cut $160 million from Whirlpool's operational budget over five years. Whirlpool cited $1.6 billion in selling and administrative costs last year, up 2.7% from 1996.

Although Whirlpool wouldn't release the exact budget of the project, Hester said the company expects the new pricing system will pay for itself within a few years "because the benefits are so great, like better managing our pricing and reducing customer claims."

Historically, Whirlpool's customer claims usually resulted from pricing discrepancies. Customers, ranging from mom-and-pop stores to mega-retailers such as Sears Brand Central, were quoted one price when they ordered a product and received an invoice with a different price when the product arrived.

The former approach made finding information difficult, said Kathleen Descamps, business project manager for Whirlpool's new pricing system.

"We would tell trading partners we were going to sell them something at 'x' price, but the system was charging them 'y,' " Descamps said. "So we would have to issue them a credit. It creates dissatisfied customers. It's much easier to say we are charging them 'x' and that is what is on the invoice."

SAME INFORMATION FOR ALL

With one centralized pricing system, sales agents will be able to meet that goal.

The same information will be replicated in sales agents' laptops for quick reference when making field calls to trading partners.

"They will have the same sales history information that is used to make [production] forecasts," Descamps said, so they will have the same information to help meet the forecasts.

Bruce Richardson, an analyst at Advanced Manufacturing Research, Inc. in Boston, said Whirlpool is ahead of many manufacturers in aggressively attacking its outdated pricing system. The faster a company such as Whirlpool can react, the more likely it is to win customers in a rapidly changing market.

"People [in manufacturing] are starting to realize that pricing is everything," he said. "You want to do real-time pricing so you can align the street price of a product with the actual amount it costs you to make a product." □

No room for error

Whirlpool's current pricing system is highly dependent on spreadsheets, a laborious and time-consuming system.

Bill Hester, project manager at the appliance giant, said the quarterly job of revamping the pricing of every product takes 110 days and is prone to errors. Pricing has to be entered for every product under 11 different brand names.

"It took roughly 180,000 cells in the spreadsheet," Hester said. "Since pricing is formula-driven, if someone changed a formula, you wouldn't know the effects somewhere else in the spreadsheet. It took a lot of work to get the pricing masters printed."

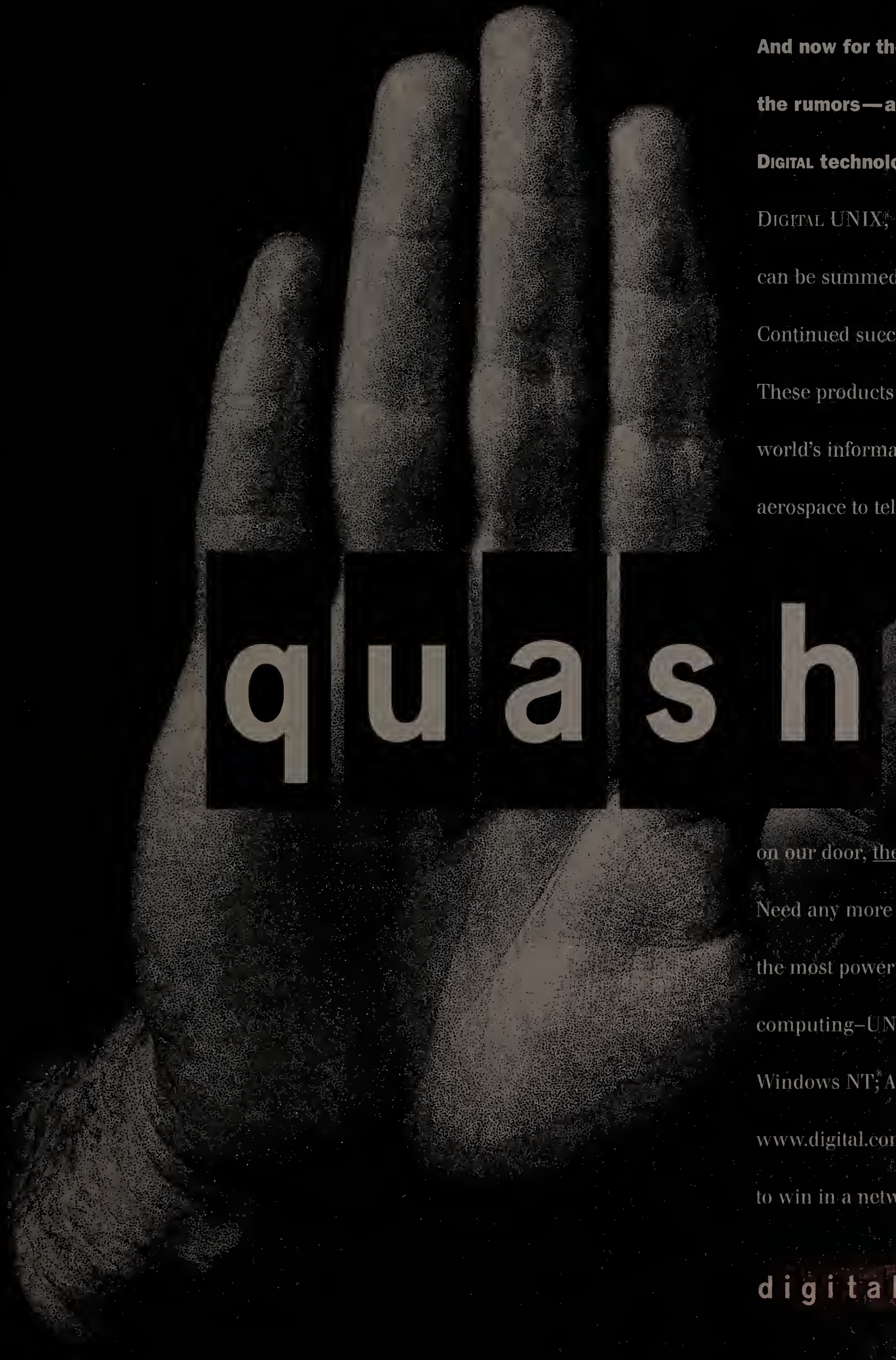
Whirlpool's Bill Hester: The company's new pricing system reduces the likelihood of costly errors

Creating the quarterly pricing masters requires calculating new prices, reviewing them, printing them, reviewing them again and feeding them into the old mainframe system. After that, the new pricing must be mailed, faxed and sent by overnight delivery to trading partners and regional sales representatives, Hester said.

"There were a lot of places where errors could occur," Hester said. "So in our new environment we have one pricing table for the company, and one person is the pricing administrator."

If a marketing manager needs to change the price of dishwashers to match General Electric's pricing, that person can now enter the information, do a profitability analysis on the change and then, if acceptable, enter the new price.

"Then a message is automatically sent to the pricing administrator, who sets up any rules for the pricing, and as soon as they hit 'enter,' if the pricing is effective today, the next person that places an order gets that new price," Hester said. — Randy Weston



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Compaq tries to build E-credibility

▸ *PC maker must prove itself to Web community*

By April Jacobs

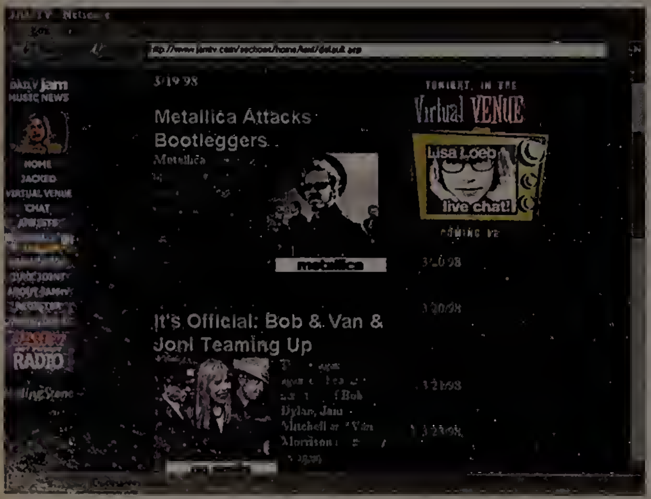
COMPAQ COMPUTER Corp. this week plans to jump into the electronic-commerce market with a suite of products designed to help users build businesses online.

But the No. 1 PC maker must convince users that it is more than a PC and server company, users and analysts said.

At JamTV Corp., an online site for music and *Rolling Stone* magazine features, Compaq's ProLiant E-Commerce Server and Microsoft Corp.'s Commerce Server software will provide the technology for a new online store.

The store is slated to go live in two weeks on the World Wide Web at *www.jamtv.com.*

Mike Udrow, chief technology officer at JamTV, said Compaq was providing his Chicago-based company with an easy way to set up a commerce Web site.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JamTV, a music site, used Compaq's ProLiant E-Commerce Server to build its online store (pictured above)

"The benefit for us is that we have already developed our existing site using Microsoft tools and Compaq Web servers, so when we found this was available as a package, we could be confident that it would work," Udrow said.

He estimated the company's start up costs to be about $17,000 for a site that could handle several thousand transactions per day.

READY FOR TAKEOFF

"It will start out slow, but the more we can offer, the better. And we expect that to be driven by the interest of the people who are coming to the site," Udrow said.

In addition to using Commerce Server, Compaq's electronic-commerce package uses other pieces of technology that allow for secure transaction processing and the design of Web sites.

Users who are less familiar with the world of Web commerce said they may have more difficulty accepting Compaq as it attempts to break new ground.

Hugh Allan, manager of information technology at Dunlop Tire Corp. in Amherst, N.Y., buys Compaq desktops and servers.

Dunlop is looking at the Web as an alternative to its electronic data interchange business-to-business network connections.

NEW IMAGE

But Compaq isn't the first vendor that springs to mind, he said. "I just don't think of Compaq in those terms," said Allan, calling the vendor's move to electronic commerce a "huge paradigm shift."

The skepticism about Compaq is understandable, said Mildred Wulff, an analyst at Jupiter Communications, Inc. in New York.

"They haven't been a player in this space, but their success will also depend on how hard they initially push," she said.

Compaq's biggest competitor will be IBM, which already provides a comprehensive electronic-commerce package, Wulff said.

Compaq eventually may tap existing technologies from its acquisition of Digital Equipment Corp.

But Digital, which claims 600 customers and $1 billion in revenue from electronic commerce, isn't considered a heavy hitter, observers said.

Hewlett-Packard Co. also is making a play in the market. ☐

Antispam sendmail piques user interest

CONTINUED FROM PAGE 6

FAQs: The scoop on sendmail

Q: ***What is sendmail?***
A: A freeware program used to route about 75% of E-mail messages on the Internet.

Q: ***Who uses it?***
A: It is the standard at universities, Internet service providers and other places where Unix has a stronghold. But most large companies have sendmail somewhere in their E-mail backbone, usually linking companies' internal E-mail systems to the Internet.

Q: ***How will the commercial version of sendmail be different from the freeware version?***
A: The commercial version will include graphical tools for simplified setup and administration, plus support. Emeryville, Calif.-based Sendmail, Inc. will continue to give away a freeware version.

Q: ***Which products will the commercial version of sendmail compete with?***
A: Sendmail will compete with Internet mail servers from companies such as Software.com. and Netscape Communications Corp. It also will go head-to-head with Internet gateways from Lotus and Microsoft.

added. Few expect sendmail to steal business from messaging heavyweights such as Microsoft and Lotus, which control the E-mail desktops and servers in most companies. For one thing, sendmail lacks the directory services and collaborative features big companies need.

"We moved to Exchange because we wanted tight integration between our E-mail system and our directory," said Kirk Reeves, systems engineer at the Kentucky Department of Education in Frankfurt, Ky.

CORRECTING FOR LIMITS

Indeed, officials at Sendmail said they initially will target Internet service providers with their commercial offering.

Sendmail could also appeal to companies that increasingly are relying on Internet messaging to stay in touch with trading partners and customers.

"Sendmail is more robust and reliable than the leading E-mail systems," said Paul Hoffman, chairman of the Internet Mail Consortium, an industry group in Santa Cruz, Calif. "It's also more limited, and it's hard to configure."

It currently takes a Unix guru to set up sendmail, said Greg Olson, CEO of Emeryville, Calif.-based Sendmail. The commercial version will address that issue by providing graphical administration tools, plus a network of service providers, he said. Today, if you have a technical question about sendmail, you can log in to a World Wide Web site (*www.sendmail.org*) and get free support from a network of volunteers.

"The support is actually quite good, but the model doesn't cut it for the corporate market," Olson said. Some users said sendmail's past security holes will keep it off their networks, though analysts said many of the software's kinks have been worked out.

Philip Carden, a managing consultant at Renaissance Worldwide, Inc. in Hoboken, N.J., said there have been about 10 major security advisories about sendmail over the past five years but no major glitches in the past 15 months or so.

"In some ways, I think that puts sendmail in a stronger position," Carden said. "People have had years to come up with creative ways [to attack it]." ☐

Senior editor Sharon Machlis contributed to this story.

Spam-fighters see fix at end of tunnel

By Barb Cole-Gomolski

FOR THE PAST year, the battle to stop junk electronic mail has looked bleak. Federal legislation efforts have stalled, and spammers regularly have proved they can outsmart E-mail filters.

But antispam advocates said they are encouraged by new state bills and the promise of improved filters in the popular sendmail package and other Internet E-mail servers.

"There's hope again that there may someday be a solution to spam," said J. D. Falk, a member of the board of directors of the Coalition Against Unsolicited Commercial E-Mail, an industry group fighting for curbs on spam. "People realize how big a problem [spam] is and are now willing to deal with it."

Spam accounts for about 10% of all E-mail traffic, according to *Computerworld* research.

Though a federal law banning spam isn't expected any time soon, Falk and other antispam advocates are reassured by legislation introduced earlier this month in California.

The bill lets Internet service providers sue spammers for up to $15,000 per day if their networks are used without provider permission.

"Something like the California bill on a larger scale would really help quite a bit," Falk said. Spammers also may have a harder time penetrating the more elaborate filters that many Internet mail companies are adding to their servers, industry watchers said.

For example, sendmail, which routes most of the E-mail on the Internet, is gaining tools in its upcoming Version 8.9 that will let administrators design a multilevel filtering system thought to be more powerful than most on the market today.

"That will spur other [Internet E-mail] companies to add more filtering," predicted Paul Hoffman, chairman of the Internet Mail Consortium industry group in Santa Cruz, Calif. ☐

License management standard proposed

CONTINUED FROM COVER 1

platform, usage-based licensing models. It would also centralize and automate license management.

"The goal is to sell software a little like electricity, where individual characteristics of usage are measured on a regular basis to make sure that the vendor and user are in compliance with license terms," said Doug Balog, program director of IBM's S/390 product development team.

Guide's specification would standardize the programming interface that applications use to access licensing services. That would provide a consistent way for developers to incorporate hooks and identifying code in their software to track its use. "It will be great to have standard usage-based pricing," especially as companies keep consolidating more applications on big servers, said James Moser, manager of technical services at Duquesne Light Co. in Pittsburgh.

Then again, such standards will work only if large users pressure vendors to accept it and there is broad cross-industry support, warned John Young, an analyst at The Clipper Group, Inc. in Wellesley, Mass.

The initiative comes at a time when there is a growing sense of urgency among information systems departments to curb spiralling software costs. Those costs can account for up to half of a company's total information technology budget.

Some previous standardization attempts failed to gain much momentum because they were far too proprietary, limited in scope or both, Young said.

The 2,500-member Chicago-based Society for Information Management for several years has advocated for sweeping license management changes. And as far back as 1992, 20 key vendors, including Microsoft Corp., Novell, Inc. and Lotus Development Corp., agreed to standardize on a common licensing specification through the Software Publishers Association.

Many licensing schemes currently are based on the capacity of the hardware on which the software runs, rather than actual usage of the software.

"So I may have a reporting tool that is only being used by 10 people, but because I consolidated it on a 150 MIPS [mainframe] system, I will end up having to pay more" than if it were running on a smaller server, Moser said.

Guide's effort would go a long way toward remedying such situations by letting users pay for only as much software as they use.

The user group's effort promises to be different from previous attempts, said Jim Lackey, head of the Guide project and IT director for the Government of British Columbia in Victoria, Canada.

For one thing, the initiative has the support of the influential Open Group. Also, the standards are being jointly defined with vendors such as IBM, Boole & Babbage, Inc., BMC Software, Inc.Isogon Corp. and Gradient Technologies.

To encourage broader industry participation, Guide is recommending a branding program to identify vendors that are compliant with the standard. ☐

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For these and other related links, go to:
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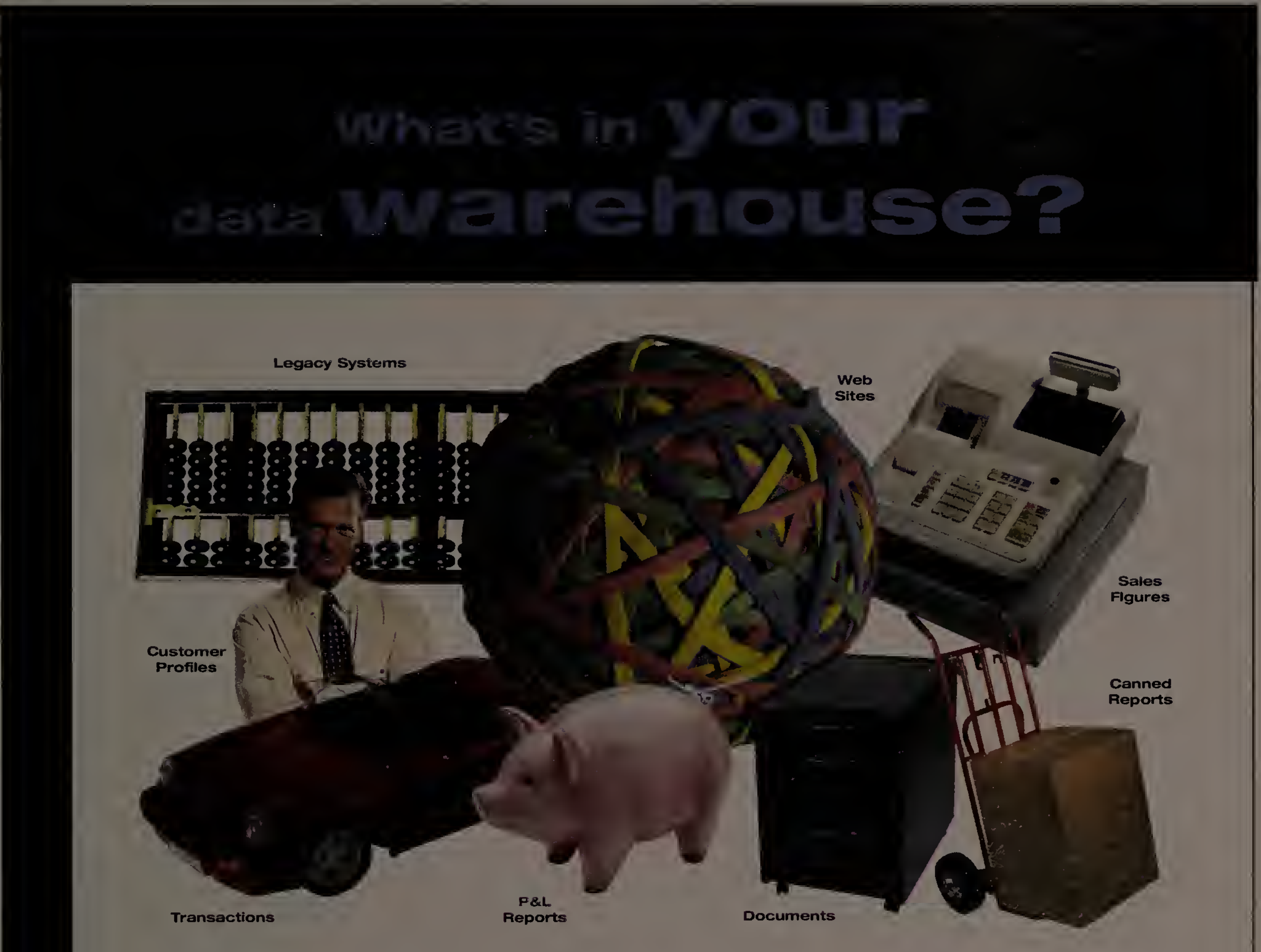

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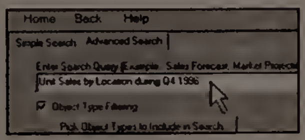
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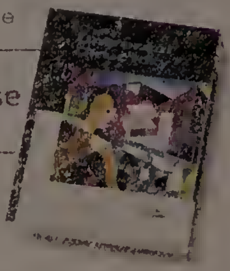

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Next Domino server goes into beta

By Barb Cole-Gomolski

LOTUS DEVELOPMENT CORP. last week began a widespread beta test of the next release of its document management software for its Domino messaging and application servers, company officials said.

Domino.Doc 2.0 has several enhancements that make it more useful to large companies, beta testers said. The upgrade supports a feature called distributed locking that lets companies store document repositories on distributed servers.

With Domino.Doc 2.0, companies will have a lot more flexibility in the way they set up document systems based on Domino, said John White, a senior manager for groupware at JPL International, Inc. in Waterloo, Ontario. White is testing the product.

Users can now spread out repositories over several locations or have replicas of repositories at several sites, he said.

"[Domino.Doc 2.0] is also a lot more flexible in the way it lets you store documents in folders," White said. Performance improvements and a new application programming interface for customizing the software also will be included in the upgrade, which is slated to ship at the end of the second quarter.

The first release of Domino.Doc focused on allowing groups of people to author and view documents from World Wide Web browsers, Notes clients and other desktop applications, Lotus officials pointed out. The upgrade leverages Notes' groupware features, allowing a document to be reviewed by the author's peers and supervisors.

Projections from Boston-based Delphi Group, Inc. put 1997 worldwide revenue for document management software at $428 million, up from $341 million in 1996.

Lotus officials confirmed that the Cambridge, Mass.-based company also is prepping an imaging client for Domino.Doc that will let users scan, view and edit documents from a Notes client or Web browser.

Pricing wasn't available for that client or the Domino.Doc 2.0 upgrade.

Several users said Domino.Doc appeals to them because they can add document management applications to their Notes network.

Notes' biggest competitor, Microsoft Exchange, lacks a Microsoft Corp.-branded document management package, although such add-ons are available from third parties.

Novell, Inc.'s GroupWise, on the other hand, has built-in document management capabilities that come bundled at no extra charge.

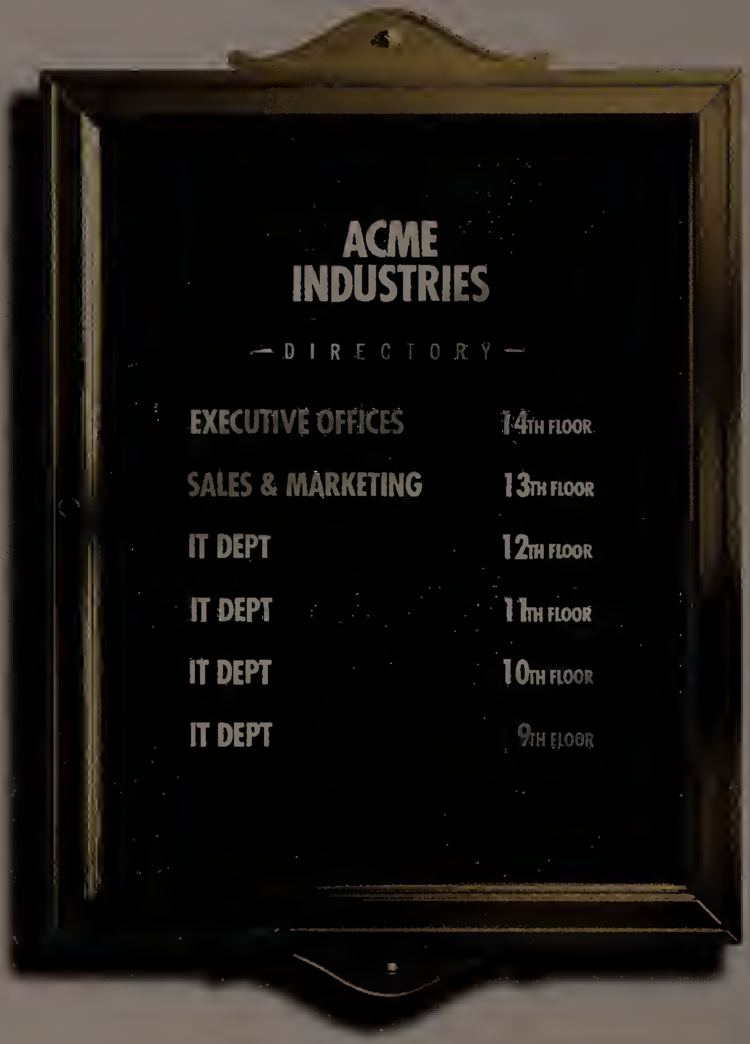
NEW TO DOMINO.DOC

- Distributed locking, which lets companies run document repositories on multiple servers
- New API
- Performance improvements

"[The Domino.Doc approach] is definitely more economical than bringing in another product if you are already supporting Notes," said Daniel Gilleese, manager of information systems at Wilson Learning Corp. in Eden Prairie, Minn. The company is considering using Domino.Doc to manage some of the education material it publishes.

But that tight Notes integration presents some challenges, Gilleese said. "If we put in [Domino.Doc], we're looking at changing the capacity requirements for our Domino servers," he said.

The company currently manages its documents on Novell file servers. ☐



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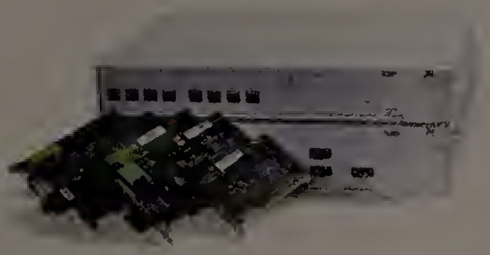

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IS/business liaison jobs face political pitfalls

CONTINUED FROM COVER 1

The IS/business liaison position has been an utter failure at some companies. Others have gotten the concept to work, but after much trial and error and fine-tuning of responsibilities.

Dean Meyer, president of N. Dean Meyer and Associates, Inc., a Ridgefield, Conn., IS management consulting firm, said adding relationship managers is "a good idea that is usually poorly implemented."

But chief information officers keep trying to make that idea work because the alternative may be to outsource the whole IS department if business dissatisfaction gets any worse. A study by Meta Group, Inc. in Stamford, Conn., shows that about 30% of U.S. companies have IS/business relationship managers.

"If IS staffs don't become more productive and deliver high-payoff applications, they will die," said Jim Hatch, CIO at Case Corp., a construction equipment maker in Racine, Wis. Hatch recently reorganized his 900-person IS department, putting about 45 in the relationship manager role.

Hatch expects to see a 20% to 30% improvement in IS productivity within three years, which means more completed, successful IS projects. He also hopes his IS department's mediocre satisfaction rating among end users will improve.

POLITICAL ARENA

What is it like to be an IS/business go-between? "My job is 80% to 90% political and 10% technical," said Michael Bell, business information officer at the drug regulatory affairs division of Novartis Pharmaceuticals Corp. in East Hanover, N.J. "I listen to what everyone has to say, and in the end, I'm almost like a judge."

In-house relationship managers — who actually have a variety of titles, such as account manager, business consultant or business information officer — help the business community determine its IS needs and articulate those needs to IS. For example, they might help a division determine if it needs to install groupware, but they wouldn't recommend a specific system.

The reasons for failure vary by company and include turf battles, communication bottlenecks, unclear roles and lack of authority.

Relationship managers were not successful at Fort Lauderdale, Fla.-based Blockbuster Entertainment Corp. when the video store giant tried the concept in 1995.

The problem was that IS liaisons to Blockbuster's business units didn't really report to anyone. "That makes it difficult to get someone to stay motivated," said H. Scott Barrett, former CIO at Blockbuster, who joined Republic Industries, Inc. across town as CIO this past summer.

In one of Blockbuster's business divisions, the relationship manager and his corresponding IS contact were unable to work through a difference of opinion about their business roles, Barrett said. He said he is now more inclined to let business-savvy senior IS managers work directly with business units.

Progressive Insurance in Mayfield, Ohio, adopted the relationship manager concept and then threw it out.

The relationship managers "didn't understand the technical side," said Jerry Winchell, controller at the 14,000-employee firm. "Instead of making things easier, they made them harder."

In place of relationship managers, the company now has what it calls "process leaders," who oversee individual business processes, such as claims processing, and lead a team that includes an IS executive and application team.

WHY RELATIONSHIP MANAGERS FAIL

- They lack the stature or business knowledge to win the respect of company executives
- They make commitments for others
- They become a communication bottleneck, demanding that all contact with executives go through them
- They encroach on the turf of information technologists or business executives
- They see their role as defending the business's interest against the rest of the organization rather than mediating between the IS and business groups
- They fail to add value; others in the organization fail to see the value of the relationship manager
- They charge for services that should be free, departments refuse to pay due to lack of funding and the function is eliminated
- Technologists fail to reserve sufficient time to work with them

Source: *Structural Cybernetics* by N. Dean Meyer

An ongoing debate is whether relationship managers should come from IS or the business units and whether they should be considered part of the IS organization or not.

Former Blockbuster CIO H. Scott Barrett says he is more inclined to let business-savvy senior IS managers work directly with busineess units

Meyer said companies should draw half their contingent of relationship managers from the business population and the other half from IS.

Even then, it can be hard to get buy-in from both sides.

Chris Arena, now year 2000 project manager at Conectiv, a utility in Wilmington, Del., held the relationship manager job in 1993 at Atlantic Energy, Inc., which merged with Delmarva Power & Light Co. to form Conectiv a year and a half ago. "I reported to IT, and I didn't get the respect from the business community," Arena said.

At the same time, Arena was unsuccessful at negotiating service-level agreements with the business units "because I couldn't get the IT people to commit," he said.

The utility still uses relationship managers, but it has elevated the position to a more senior management level to boost their credibility with both IS and the business units.

According to Meta Group, the average salary for a senior relationship manager is about $78,000, but several companies said they have had to up the ante — bringing in high-level people who command salaries of $120,000 to $160,000 — to fill the job.

BUSINESS-SIDE CHALLENGES

Plucking relationship managers from the end-user community presents its own challenges.

Detroit Medical Center's information services division last September recruited eight nurses, physicians and hospital administrators to act as IS liaisons to their respective departments.

"Operations committee" members are responsible for relaying the impact of systems development and business process re-engineering to their peers, said Terrence P. Carroll, vice president and CIO at the Troy, Mich.-based hospital group.

Dr. David L. Bouwman, 50, is splitting his time between being an IS liaison with other physicians and his role as vice chief of surgery at the affiliated Harper Hospital in Detroit.

Working two long days each week with the IS group and spending the rest of his time as a surgeon has been a difficult balancing act for Bouwman. "It's very challenging because patient obligations take real time and take precedence over scheduled meeting time" with the operations committee, said Bouwman, who also is the director of a breast cancer center.

Plus, Bouwman has to deal with the guilt when he gets a telephone call in the middle of the night to consult on a patient emergency and has to pass it on to another physician. "I feel like a benched player in the middle of an important game," he said.

Indeed, relationship management takes a special breed: individuals who are intimate with the company's business, yet technically savvy. Even with the right mix of skills, it can be a challenge, veterans said.

"At times, you have both sides hating you, but your job is to look after the end user and end-user management to make sure their IT needs are being met," said Mike Fleming, strategic consultant at SmithKline Beecham PLC's research and development division in King of Prussia, Pa., which has used relationship managers for 15 years.

'The job really becomes difficult when IS fails to provide service," Flrming said. "At that point, you are viewed as part of IS by the end-user community." ☐

Dow's switcheroo

Dow Chemical Corp. in Midland, Mich., is one of many companies that has revamped its approach to relationship management to make it work.

Christine DeBurton, a business IS manager at the company's emulsion polymers and polyurethane business units, used to work for the IS department and spent very little time working with the business unit.

But that changed after Dow re-examined and refocused its IS liaison program to have the liaison officers report directly to the business units.

Last summer, DeBurton and the other IS business managers were given specific responsibilities such as ensuring that each business unit has an information technology plan, measuring the benefits of business IT projects and monitoring compliance with service-level agreements.

DeBurton, a 23-year Dow veteran said she likes the change. Previously, her key responsibility was to market IS services to the business units. Under the new regime, her key role is to work with business managers to plan their IT strategies.

"Personally, I'm a lot happier being inside the business, because in IS we tended to get further and further away from the people we were trying to serve as we built these huge, global systems," DeBurton said.

Tommy Block, vice president of Dow's emulsion polymers business unit, said he likes the new structure.

"Almost immediately, Christine's objective was to learn our business strategy and then integrate IT solutions into the business — instead of trying to sell me [IT] solutions I wasn't even sure I needed," he said.

— Thomas Hoffman and Barb Cole-Gomolski

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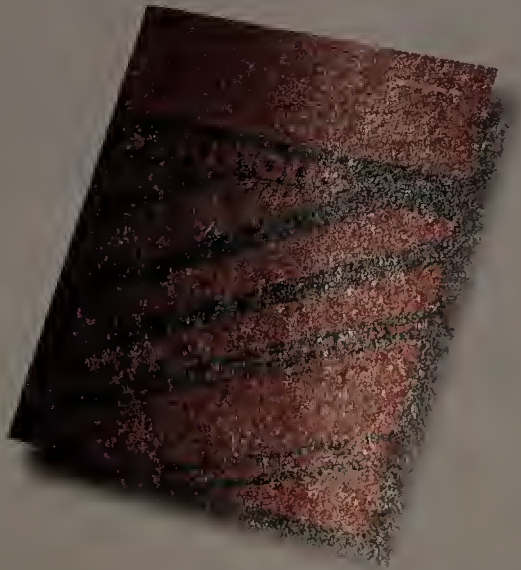

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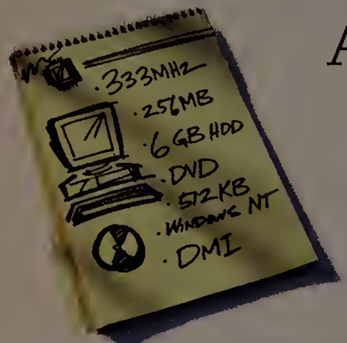

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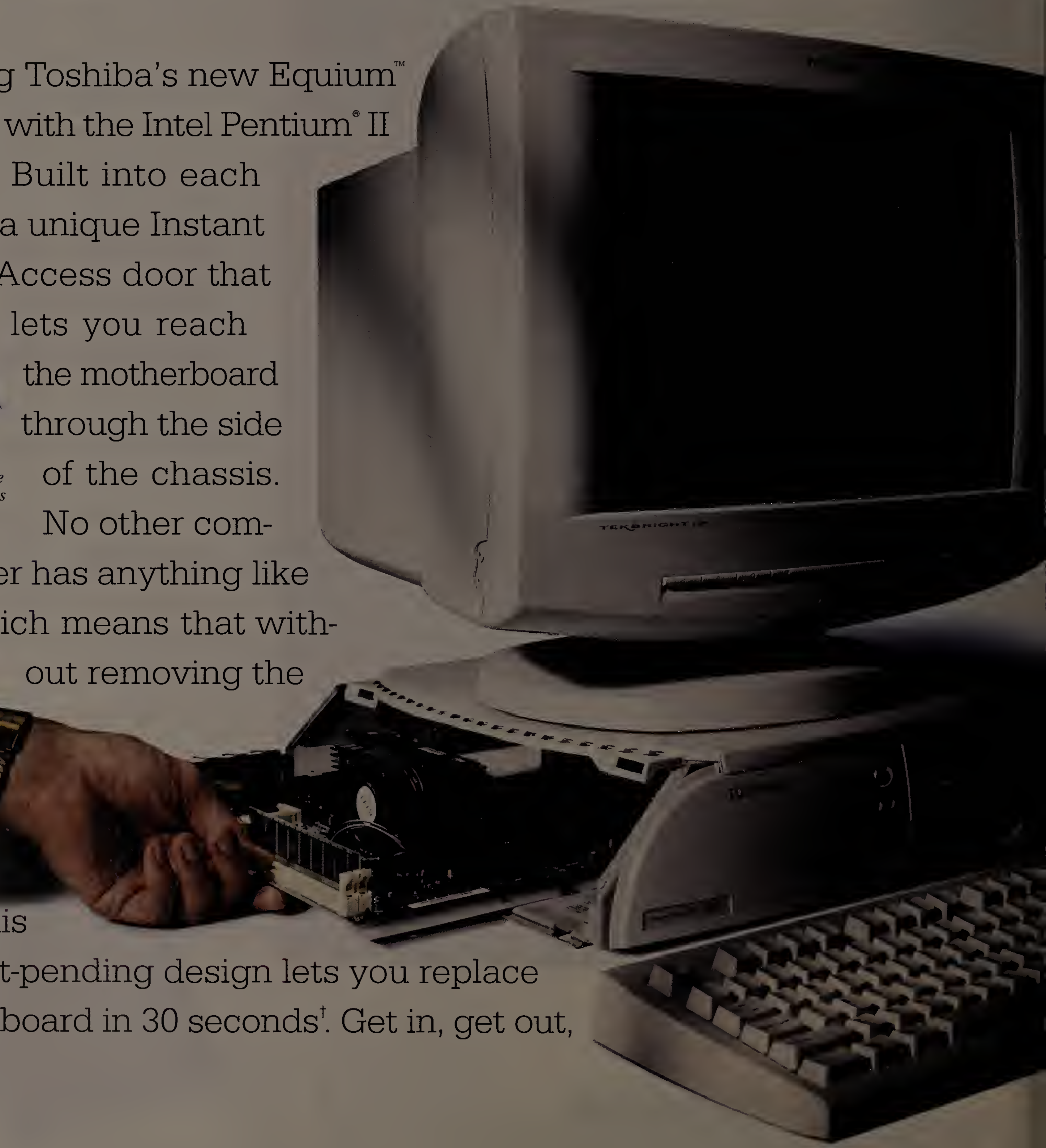

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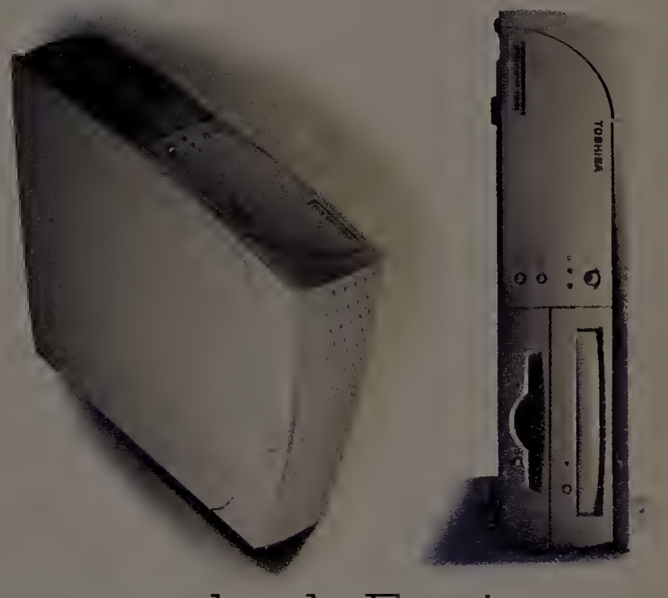

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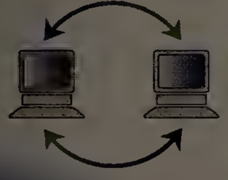

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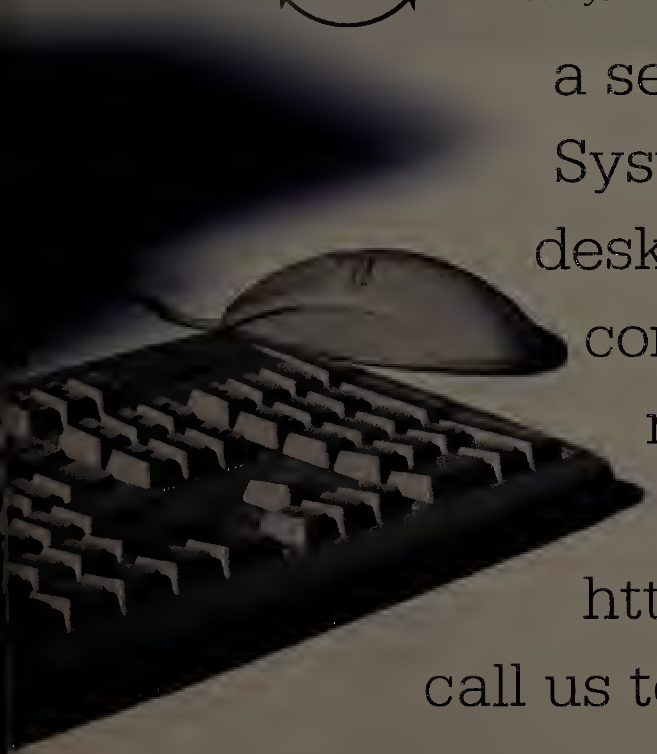

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Warehousing projects hard to finish

By Craig Stedman

MORE THAN HALF of data warehousing projects either fall behind schedule or get put on hold, according to a survey released last week.

The survey, jointly conducted by The Conference Board and Price Waterhouse LLP, also found that more than 60% of the 50 companies that took part rated themselves as only partially successful at meeting the data analysis expectations of end users and senior management.

And cost overruns hit 20% of the respondents, while 18% had to swallow cuts in their warehousing budgets.

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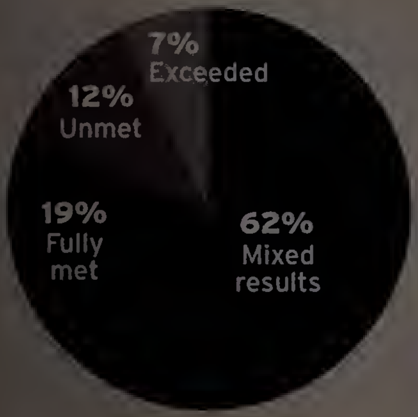
Has your data warehouse met user expectations?



Base: 50 companies, most with more than $1B in annual revenue

Source: The Conference Board, New York; Price Waterhouse LLP, New York

Several warehousing managers and industry analysts said the survey results reflect the difficulty of making a data warehouse work unless business users are involved up front and a tight lid is placed on the project's scope.

Heavy advance planning, with an emphasis on business needs, and a realistic development schedule are considered crucial to keeping warehousing projects on track and in the good graces of users and management.

"You have to know where you want to go before you can get there, and it has to be totally business-driven," said Rob Gaylord, data warehouse architect at the Municipal Electric Authority of Georgia (MEAG) in Atlanta. "We can give [users] anything they want. But we can't divine what that is."

MEAG fits right in with the survey findings. The utility has put its warehousing plans on hold while business executives hash out a new strategy to deal with the proposed deregulation of Georgia's electricity market, Gaylord said.

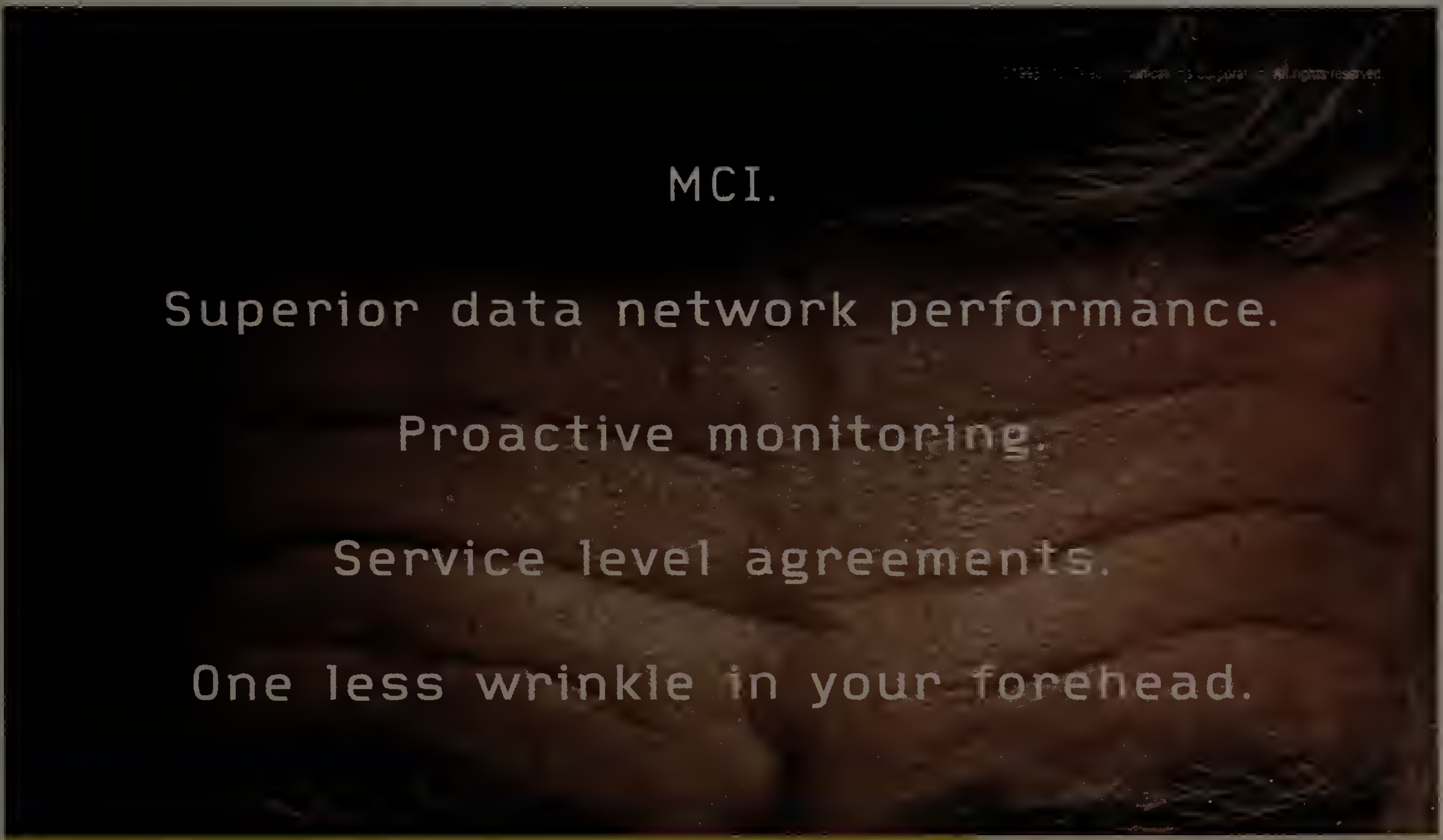
Development was expected to start last fall after MEAG finished testing a small pilot data mart. But working out all the business issues is taking longer than planned, Gaylord said. He added that MEAG hopes to wrap up the strategic deliberations by midyear.

The hardest part of building a data warehouse is cleaning up production data and putting it in a format that end users can grasp, said Robert Craig, an analyst at Hurwitz Group, Inc. in Framingham, Mass.

"You can't just be driven by the desire to have the biggest, meanest data warehouse around," Craig said. "That's a way to not have success."

And the track record of companies isn't anything to write home about, according to The Conference Board survey. A whopping 44% of the respondents said their warehousing projects were behind schedule. Another 14% had put their projects on hold.

Don Stoller, director of decision services at Owens & Minor, Inc. in Glen Allen, Va., said the $3 billion medical supplies distributor has kept its warehousing plans from going awry by staggering the development of a series of tightly linked data marts so that each takes only about four months to build. □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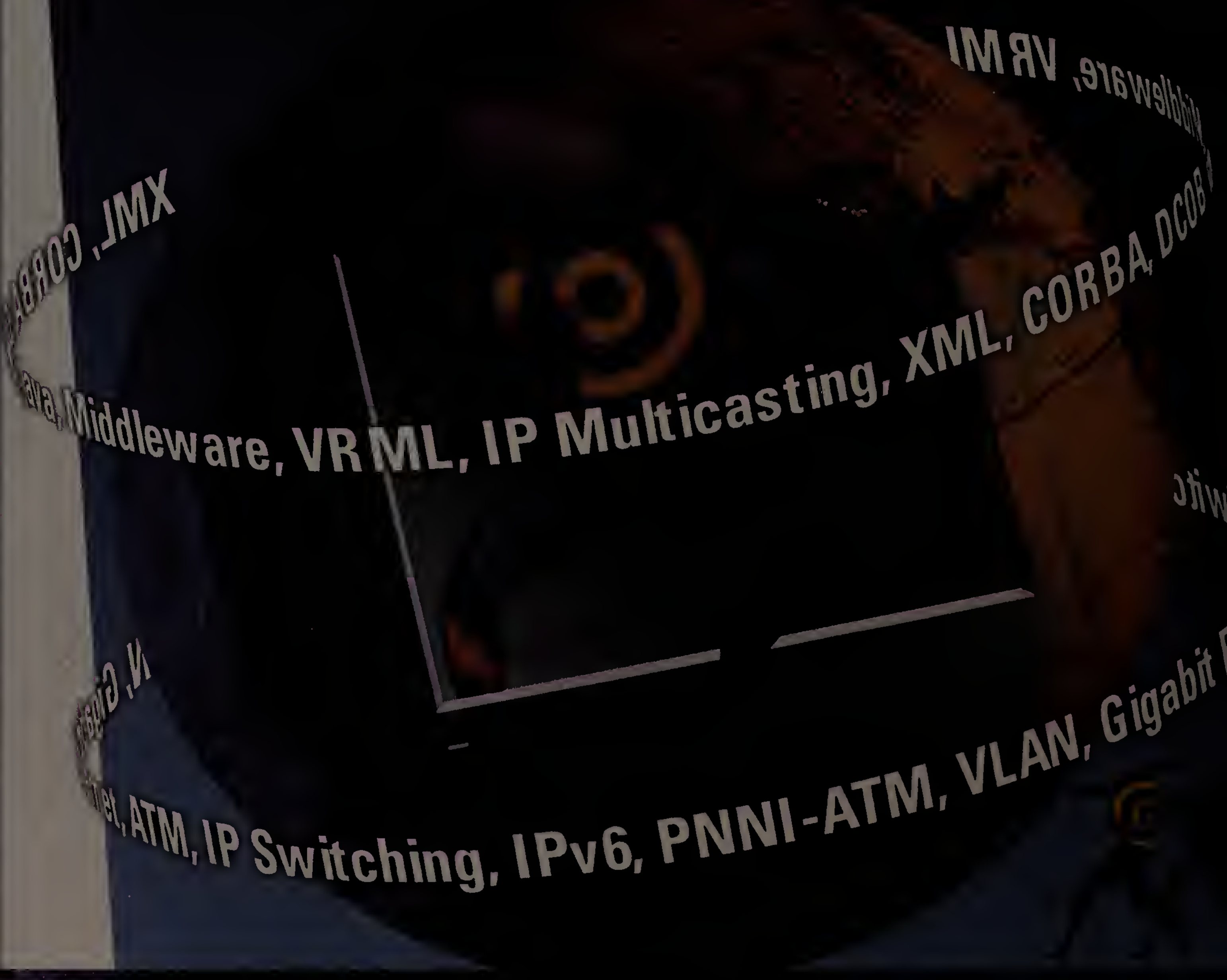
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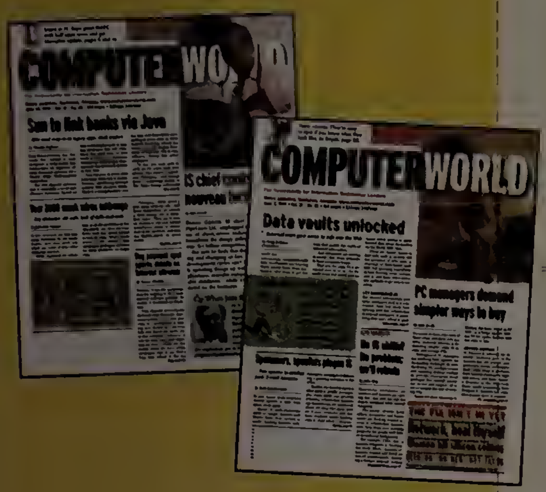

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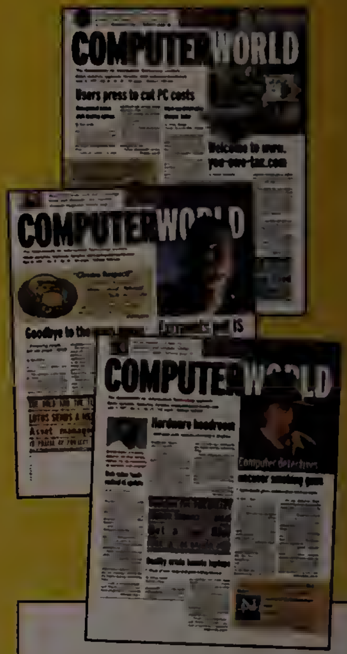
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Fibre Channel

DEFINITION: Fibre Channel is a network technology that was designed for storage and server clustering. Fibre Channel Arbitrated Loop (FC-AL) is the most widely accepted standard of Fibre Channel. FC-AL has transfer rates of 100M bit/sec. per channel and transmission distances of up to 10 kilometers. It can attach as many as 126 devices per loop, and devices are hot-swappable. Fibre Channel was designed to support applications that require high bandwidth, such as audiovisual rendering, online transaction processing, data warehousing, data mining and Internet/intranet browsing and serving.

Products on the rise, but technology still young

By Nancy Dillon

FIBRE CHANNEL is a high-speed interconnect technology that promises to go beyond the previous limits of the standard SCSI interface used across the storage industry. But analysts say Fibre Channel still has a way to go.

The technology is expected to grow up over the next couple of years.

In fact, Framingham, Mass.-based research firm International Data Corp. (IDC) predicts that by the end of 2000, half of all external storage in the U.S. will be connected via a Fibre Channel interface.

AT ISSUE

Technology promises to mature within two years.

As the technology matures, users will be able to take advantage of Fibre Channel's speed, distance and scalability gains over SCSI (see Fibre Channel vs. SCSI chart below) to implement applications such as remote mirroring and remote clustering of storage.

Fibre Channel products are starting to appear on the horizon. There are new Fibre Channel switches and hubs that will let users create networks that resemble LANs and WANs. Those networks, often referred to as storage-area networks, will make it possible to link servers to storage systems.

Since Fibre Channel was intended to be used in the case of high-bandwidth applications, users may want to consider adopting it, even in small measures, experts say.

Early Fibre Channel adopters are using multimedia or computer-aided design applications that require extremely fast data throughput, says Robert Gray, an analyst at IDC.

"In 1998, end users should think about buying a pilot Fibre Channel system to get some experience with the technology and begin the process of planning it into future infrastructures," Gray says. "But as with any technology, you don't take something brand new and try to control a nuclear reactor with it."

ONE VENDOR FOR ALL

When starting out, it's a good idea for users to choose one vendor for all their Fibre Channel-based products. At the very least, they should check with their primary vendors to confirm interoperability before buying outside products.

Fibre Channel has standards, but as with any new technology, different vendors' development teams might interpret the standards differently, Gray explains.

Vendors that are building full lines of Fibre Channel products include Sun Microsystems, Inc. in Palo Alto, Calif.; Digital Equipment Corp. in Maynard, Mass.; Hewlett-Packard Co. in Palo Alto; Data General Corp. in Westboro, Mass.; and EMC. Corp. in Hopkinton, Mass.

Les Lichter, chief information officer at Excel Communications, Inc. in Dallas, says his company is moving cautiously but decidedly down a Fibre Channel migration path that he expects to last through 1999.

"We view our implementation in three steps," Lichter says. "We will first replace SCSI as the interface on our high-end systems. Next we will connect multiple servers to multiple storage devices in a single-vendor Fibre Channel environment. And finally, we will have multiple devices connected in heterogenous Fibre Channel environments." □

QUICK STUDY ONLINE For links to research vendors and related *Computerworld* articles, go to *www.computerworld.com*. Click on Resource Center. Under In Focus, click on QuickStudy.

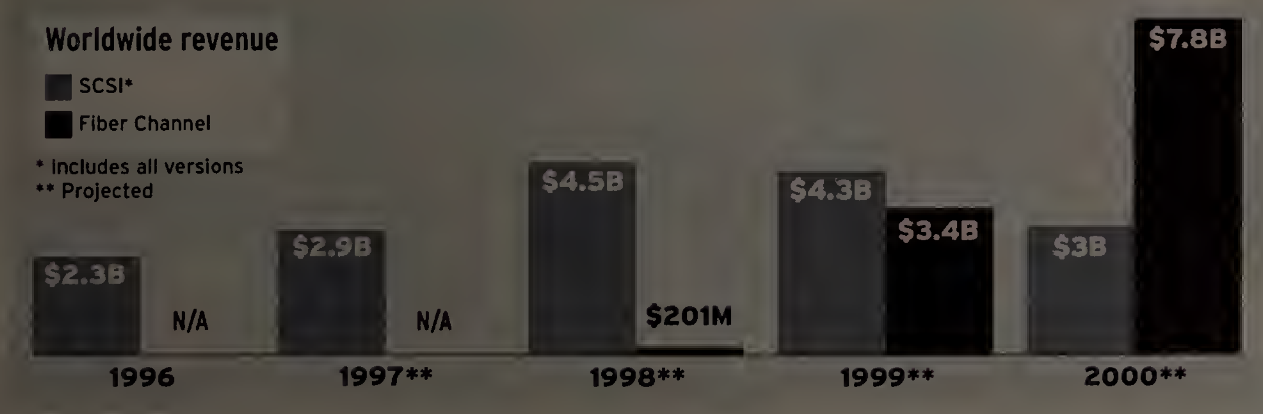
THREE WAYS TO IMPLEMENT FIBRE CHANNEL

1 As an external direct connection
Storage systems and servers are outfitted with Fibre Channel interfaces that will allow external Fibre Channel connections; those systems can incorporate SCSI-based disk drives. This implementation is currently the most prevalent.

2 As drive interface
The drives are connected to the system controller via Fibre Channel. Most systems now use SCSI or SSA drive interfaces, but many vendors are introducing systems that are 100% Fibre Channel. They have Fibre Channel drive interfaces and Fibre Channel interfaces for external connections.

3 In switched fabric
The Holy Grail of Fibre Channel. Still a year or more out for most users. By using Fibre Channel-based switches or other Fibre Channel gateways, users could to connect multiple servers and storage systems that share resources. The result would be storage-area networks that resemble today's LANs.

FIBRE CHANNEL VS. SCSI



Source: Dataquest, San Jose, Calif.

"Fibre Channel is like SCSI on steroids."
– Analyst Thomas Lahive, Dataquest in San Jose, Calif.

	SCSI	Fibre Channel
Maximum transfer rate:	40M bit/sec.	100M bit/sec.
Connection distances:	6 meters to 25 meters	30 meters to 10 kilometers
Devices per bus:	7 to 15	126

■ *Are there technologies or issues you would like to learn about in QuickStudy? Send your ideas to QuickStudy editor Stefanie McCann at* ***stefanie_mccann@cw.com***

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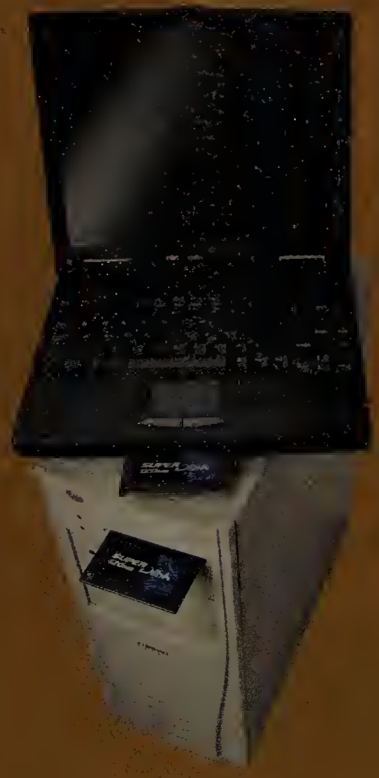

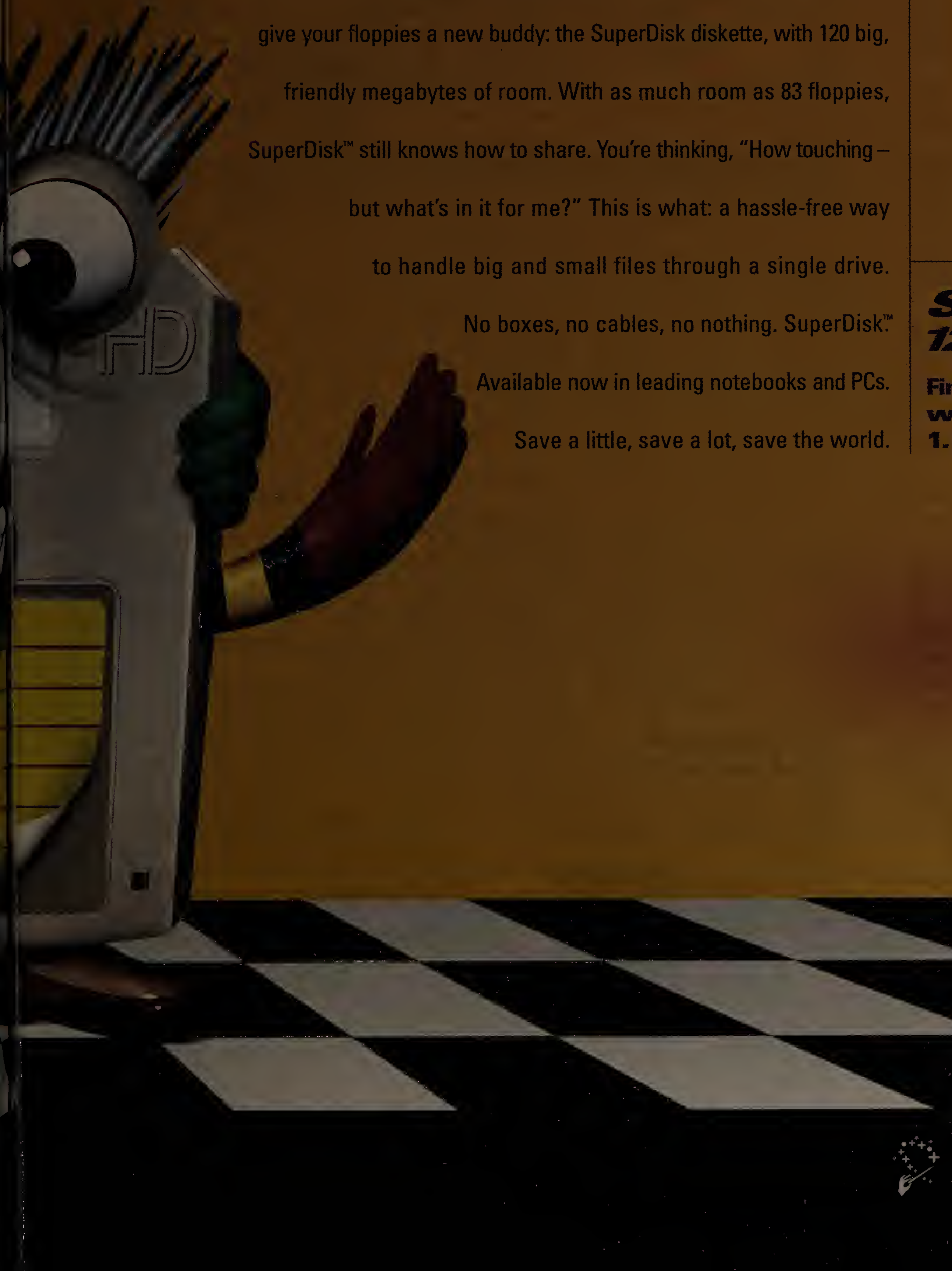

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IMATION

OPINION

Freeware phenomenon The last place I expected to see a story about an obscure, highly complex piece of free Unix software was the front page of *The New York Times*. But there it was last week, a story about sendmail, the E-mail transfer agent software that delivers the bulk of all Internet mail.

At least 75% of the enormous data traffic moved by Internet service providers is handled via sendmail code, created in 1981 by Unix guru Eric Allman.

What vaulted sendmail to such a high-profile story perch last week? It was mainly the new antispamming features in Version 8.9 coming a few months from now. Corporate America is keenly interested in the pitched battle against junk E-mail, and that conflict is escalating beyond legislative and courtroom skirmishes into the realm of technical fixes.

But the really intriguing twist here is the way freeware is reaching across the great proprietary divide to corporate IT and business users.

The concept of freeware — open source code that relies on the volunteer spirit of the Internet community to improve it — has always sent a shudder through IT shops. Who do they call for support? Some Usenet group? Yikes, no thanks.

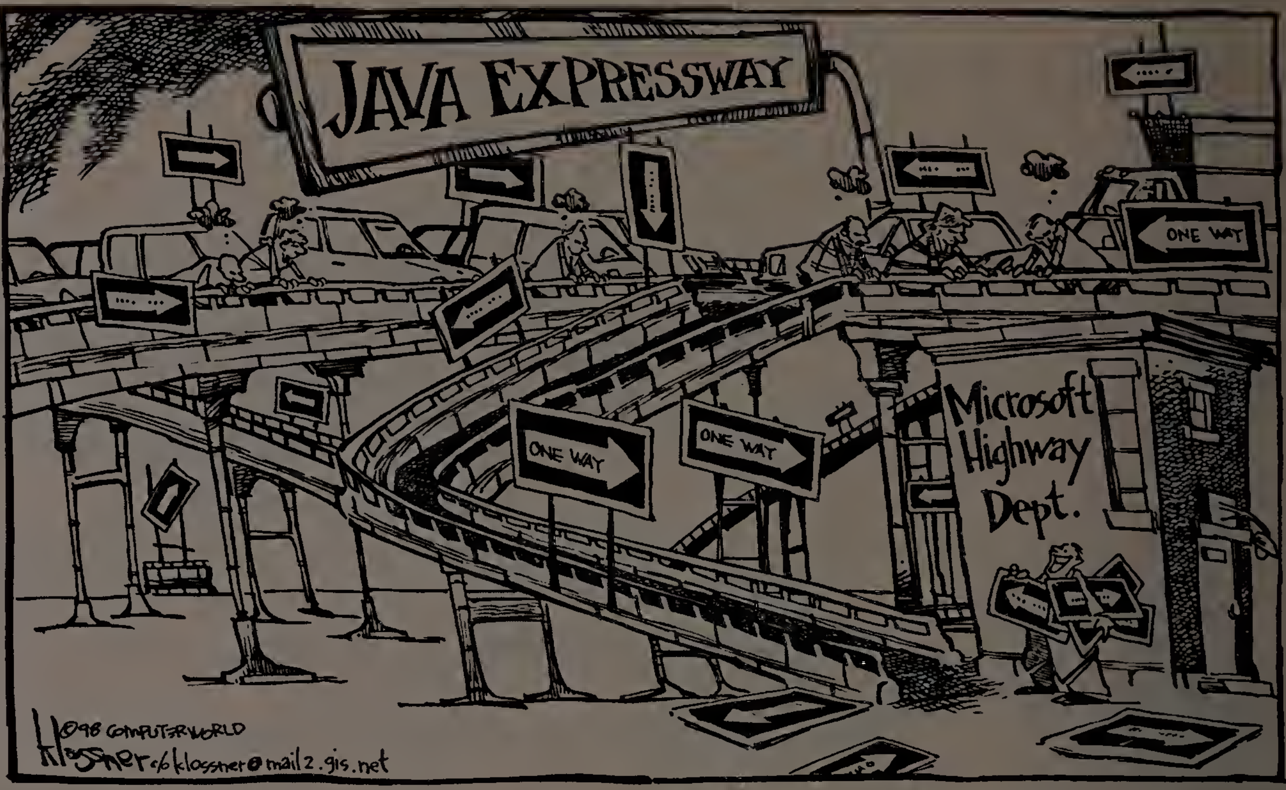
With that classic concern in mind, Allman recently set up a commercial venture, Sendmail, Inc. in Emeryville, Calif., to provide the consulting services, support and maintenance that business users crave. He plans to keep sendmail freely available as open source code but to turn out a more user-friendly, feature-rich version for businesses to buy. Netscape is taking a similar freeware approach with Communicator 5.0.

So brace yourselves for innovation, Internet-style. After all, open-source technologies are the underpinning of today's Internet. Chances are your company already relies on a host of freeware products, including HTTP, HTML, the Perl scripting language or the Apache Web server software that underlies most Web sites.

That's a welcome sign of healthy competition between the original Internet community and the proprietary invaders such as Microsoft. It's revenge of the nerds all over again.

Maryfran Johnson

Maryfran Johnson, *executive editor*
Internet: *maryfran_johnson@cw.com*



LETTERS

All signs *don't* point to NT

In reference to *Computerworld* columnist Bill Laberis' recent article ["All signs point to NT," CW, March 2], I agree that "vendors are going where they believe the money is." But I think that the idea that "customers are going where they believe the solutions lie" is fantasy, especially within the context of existing operating systems that Windows NT can only dream about becoming.

The bottom line is that Microsoft is about marketing, not product quality or development. All signs might point to NT, but guess who put up the signs?

Mark Boyajian
Information specialist
Ogden Environmental and Energy Services
Westford, Mass.
mlboyajian@oees.com

Flawed example spoiled Tapscott column on Web kids

Don Tapscott's commentary "Beyond brand: The future of marketing" [CW, Feb. 9] has an interesting premise, but it is flawed from its first paragraph.

The premise seems to be that Web information is economic power. Tapscott describes children using Web-based information to dominate a family car-buying decision, and he seems to presume that only Internet information has any value. In his example, would 11- and 12-year-olds have complete information about a family's financial status? Would children know the family's long-term budget, financial plan and goals? In most families, the answer would be no. The children may be able to prove pound for pound that the Volvo is a better buy, but a used Chevrolet may be the responsible financial choice for the family.

If Web usage leads to this kind of thinking, other media have nothing to fear from the Web.

Alan J. Wahnefried
Troy, Mich.
alan_j_wahnefried@em.fcnbd.com

Other media may have nothing to fear from the Web.

Year 10,000 fixes? Get real

In a letter in *Computerworld's* Feb. 2 issue, Frank Jensen of Broderbund Software cautions us to include year 10,000 fixes in our year 2000 fixes. It's nuts to even think about the year 10,000 at this point! Considering the amount of changes in the architecture of computers since their origin, I would be thoroughly disappointed in the computing community if any hint of today's technology remains 8,000 years from now.

Michael Schultz
Harrisburg, Pa.
mike.shultz@sharedsvc.com

Good morning, disaster

Regarding "The IT collapse of '04" [CW, March 2], we'd best wake up to the disaster that is overwhelming our industry.

I have been an IT consultant for more than 25 years. It used to be that if you knew CICS and Cobol, you were a star. To survive today, you must be proficient in at least one programming environment; throw in tons of complex third-party add-ons; work with all the databases; navigate Windows 95, NT and Unix; and be fully versed in HTML and Java code.

No wonder the average software product stinks. Where will developers find time to worry about a little tidbit called the user interface? Management must concentrate on a core of well-developed products so we can give users systems that truly work.

Bob DeLaet
Edison, N.J.
aids1@bellatlantic.net

Stinkin' badges aired out

In Jill Vitiello's article "Badge of glory" [CW, Feb. 16] about professional certifications, she uses a quote from the movie *Blazing Saddles*: "Badges? We don't need no stinkin' badges!"

Actually, that quote is originally from *The Treasure of the Sierra Madre*. When Humphrey Bogart asks a Mexican *federale* for some identification, he's told, "Badges? We ain't got no badges. We don't need no badges. I don't have to show you any stinking badges."

I just thought Ms. Vitiello would like to know.

Tony Parrillo
Temple Terrace, Fla.
rparrill@tampabay.rr.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

IS troubles: of graying hair . . .

Michael Cohn

I used to think IS was a young profession. Heck, it really only started in the 1940s. By the '50s, there was a mere handful of programmers, soon to prompt the overpopulation of headhunters in the '60s. And it wasn't until the Silicon Valley '70s that there were enough of us technical types around to keep from getting beaten up at the office Christmas party.

But now it's several decades later. We're beyond middle age. IS is downright old. Maybe not as ancient a profession as accounting, law or podiatry, but after all these years, it sure feels like it (not to mention that I have a bunion that's killing me).

All the things that happen to old people are starting to happen to IS.

The first warning sign: It takes us longer to do everything. In the old days, we could pop out payroll systems in six months. Now it takes forever. We can't get the funding. We can't get the people. In our heads we know how to do it, but in reality, by 4:30 p.m. we're pooped just filling out requisitions for the file server. Then we go home and put our teeth in a jar.

All the things that happen to old people are starting to happen to IS.

In our heyday, we were young and firm and strong. We were Apple and Digital and Lotus. Now those companies are all porch-bound shadows of their former selves, gently rocking where they once rocked and rolled.

Even the great Microsoft no longer runs amok. Once, Redmond was all fast times, endless partnerships and procreation at will. Now, the Justice Department says it's time for a vasectomy.

We're getting old. Even with all the latest tools and technologies, it's just not the same anymore. Those 56K bit/sec. modems are no different from a driver with a titanium shaft.

And 300 MHz is just like a high-compression tennis racket with a sweet spot the size of Cleveland. We fork over big bucks and arm ourselves with the latest gadgets — and still serve the ball right into our doubles partner's tush. Go figure.

But there's more.

Our hearing's going. At least according to the angry end user, who claims we haven't heard him for years. And our vision's going. For if not, we surely would have seen the year 2000 problem coming. Or the Asian financial crisis. At the very least, we would have had the sense to put in an hour or two on the euro currency crisis before this year.

Our world is out of focus, even though we've got more pitch and pixels than you can shake a stick at (and these days, I can shake a stick for only about four seconds before I need to reach for the Ben-Gay).

NEW BLOOD

So what's next? Soft foods? Will IS slouch behind the wheel of a virtual Buick Electra and ricochet from curb to curb at 25 mph?

With luck, the next millennium awaits. But maybe it waits for the young, for the fit, for the bright new minds that will make IS young again. If you're out there, we need you! We need new blood! We need the next generation of IS!

Now if we could only persuade some of those whippersnappers to come in for an interview . . . and to consider taking less than $100,000. ☐

Cohn, his gray hair and his much more noticeable jowls all live in Atlanta.

. . . and grayer areas

Michael Schrage

For every opportunity it offers, technology also creates battle zones between people and the companies that employ them. Digital technologies are dissolving the distinctions between the personal and the professional as well as the public and the private.

That's going to thrust IS into all manner of computational conflicts.

By now, every *Computerworld* reader knows that companies — not individuals — own the E-mail that travels on their networks. Employees have no reasonable "expectation of privacy" for any E-message they send or receive. Indeed, companies have the right to both monitor and curtail their people's 'net surfing.

I have no quarrel with that. But those technologies create interesting quandaries for managers at all levels of the enterprise. Let's ignore ethics for the moment, because, let's face it, most organizations, from the White House on down, care far more about money and the law than they do about honorable behavior and ethics. That's not cynicism; that's pragmatism.

Let's say I keep my schedule on my own PalmPilot. For obvious reasons, I sync it with my office PC. That's of great benefit to both the office and me.

But suppose someone scanning my calendar sees that I've scheduled a job interview or a medical treatment — something that lurks in that gray zone between the personal and the professional. What then? Does the information that happens to reside on the company PC inherently fall within the purview of my employer?

That makes about as much sense as saying an employer has the right to open the tax return that happens to be sealed in an envelope on my desk. Tough luck for me? Or a clear sign that employers and employees need to negotiate a new understanding of where personal and corporate information commingle?

To be sure, if the company's hard disk or the server had a catastrophic failure, surely my company would want the data from my PalmPilot and personal laptop to help recover the lost and damaged data. Am I to be compensated for my time, trouble and technology? What's your best guess? What's the difference between legal and fair? Do you think the company would spend money to repair the personal laptop I've used for work?

Another example: If I'm on the road on company business and make a personal call to explain why I'll be late for dinner, who should pay for it?

Similarly, if I give out work numbers and E-mail addresses to friends so my schedule can be more flexibly and intelligently managed, am I subsidizing the company or is the company subsidizing me? Frankly, those are questions more of law and accounting than of ethics or common sense.

Technology is dissolving distinctions between the public and the private.

Tomorrow's workplace — filled with freelancers, contingent employees, consultants, part-timers and independent contractors — will be a messy multimedia mix of semipublic/semiprivate information flowing over corporate networks and stored on corporate servers. Who will have to maintain those info-hybrids? Who will be asked to decrypt what may be personal files stored on the server? Who will be asked to audit data flows to discover who should be billed for what?

Precisely because so many of us have chosen to use technology to blur the lines between our personal and professional lives, we have created digital environments where personal privacy and corporate proprietary are doomed to be colored gray. And gray is a color IS does very poorly indeed. ☐

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu*

Violating privacy is bad business

Dan Gillmor

Signing up for an account at the new video store near my home, I was asked to provide my Social Security number. I said no. The clerk grumbled but still allowed me to become a customer.

I'm just one data point in the larger consuming public. But I'm part of a growing market segment: people sick and tired of businesses demanding private information and then, in many cases, trading it with other businesses.

Privacy in the Information Age is a bigger issue than companies, governments and other information collectors want to acknowledge. The issues are vast, ranging from the way companies collect and disseminate personal data to the handling of electronic mail to encryption and much more.

But one thing is becoming clear: Companies should enact logical, defensible policies on how they handle information. Such policies should be made public.

Recent court rulings suggest that companies have the right to read employees' E-mail at will (see Michael Schrage's column on this topic, page 37). Although I believe supervisors should read subordinates' E-mail only when they have specific suspicions of wrongdoing, they should at least make it clear to employees that no E-mail sent or received on company computers can truly be considered private. (Of course, the same applies to Internet and commercial online service E-mail. People who absolutely need privacy should encrypt their messages.)

The bigger issues fall outside the firewall, for the most part. And how you handle them says a lot about your company.

Few people object to companies collecting and massaging data about their customers — provided the customers give that data freely and with knowledge of how it's being used — so they can serve their customers better. The major problems arise when that information migrates into larger databases outside the enterprise with which the customer originally does business.

I consider it especially outrageous, for example, that the real purpose of warranty cards isn't to register warranties (the proof of purchase puts the warranty into effect, not the submission of the filled-out card). It is, rather, meant to feed massive marketing databases. Are consumers told this? Typically no.

Databases are full of incorrect information, and it's almost impossible for consumers to correct errors.

The Web presents new challenges for companies and consumers. Many Web sites ask for personal information but don't tell consumers how that information will be used.

These days, I tend to assume that anything I tell one company will eventually leak out into a larger collection of data. I make an exception in a few cases: where companies tell me explicitly what they're doing, and not doing, with the information I provide.

The data-abuse horror stories may actually be creating a business opportunity. I will be much more likely to do business with companies that guarantee the confidentiality of my information than those that provide vague disclosure or none at all.

Companies that treat information provided by employees and customers as nothing more than data to be bought and sold, or otherwise used, are asking for trouble in coming years. It's no coincidence that pro-privacy legislation galore is pending before Congress and state legislatures; people are getting fed up.

Trust is hard to win and easy to forfeit. Violating privacy is more than just a fine way to eliminate trust. It's also bad business. □

Gillmor is computing editor at the San Jose Mercury News. *His Internet address is dgillmor@sjmercury.com.*

Foreign IT workers? The more the merrier

David Moschella

Immigration remains one of a handful of truly divisive social issues in the U.S. today. The question of how many foreign residents should be allowed into the country cuts across politics and ideology, making the debate often sound frenetic, even schizophrenic.

Indeed, anti-immigration is one of the few things that the far right and far left often agree upon.

But in the case of the H-1B visa for skilled workers, there really shouldn't be much argument at all. Whether the issue is looked at in economic, social or moral terms, all analysis points toward the same conclusion: Raising the number of visas from 65,000 to 90,000 per year is the right thing to do.

There's no doubt the U.S. faces a serious IT labor shortage. You can challenge estimates of the size of the problem, but it's certain huge numbers of high-tech positions are unfilled. High-tech wages continue to grow far faster than the national average; that's more strong evidence that demand is outstripping supply. From a simple statistical perspective, the U.S. high-tech industry has more than doubled in size since 1990, the year the current visa limit was set. The idea that adding another 25,000 skilled workers would put serious downward pressure on IT wages in the U.S. can't be supported.

The macroeconomic case is even more compelling. As businesses everywhere seek to replicate themselves in cyberspace, the world is on the threshold of an unprecedented software boom. The U.S. has the great fortune to be the principal source of virtually all the underlying tools and applications. The resulting potential for job and wealth creation is so vast that policy-makers should do everything they can to assure that this potential is realized. Is there any doubt that highly skilled workers tend to create additional jobs all around them?

Those who argue against H-1B expansion on social or moral grounds tend to use two main arguments. The most common is that increasing the supply of foreign workers will reduce the need to train more U.S. citizens. On the surface, that sounds plausible, but I sure wouldn't want to have to make a serious case that the reason more U.S. students and workers haven't developed their IT skills is because of disincentives created by a relatively obscure visa program.

The second argument usually goes something like this: Many of the H-1B applicants come from some of the world's poorest countries, such as India and Pakistan. Surely it's wrong for the U.S. to use high salaries to lure away talented workers who might be desperately needed back home.

That argument is patronizing. The issue of what is good for India is best decided in India. The costs and benefits of allowing talented individuals to come to the U.S. aren't easily calculated. Although there sometimes can be a brain drain, the chance to work in the U.S. often provides a real incentive for talented individuals to develop world-class skills. Moreover, many H-1B workers eventually do return to work in their native lands.

I can't think of any good reason to keep the current limit. Just as the U.S. needs low-wage foreign workers to keep it competitive in agriculture and to fill jobs Americans don't want, so do we need more high-tech professionals to keep us ahead in IT. The world's software challenges are immense and growing and so are the world's human IT resources. In a global economy, it's only natural that we should draw on them. The benefits far outweigh the costs. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is david_moschella@cw.com.*

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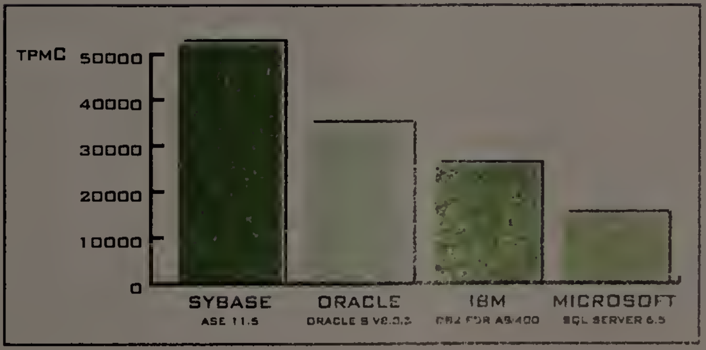

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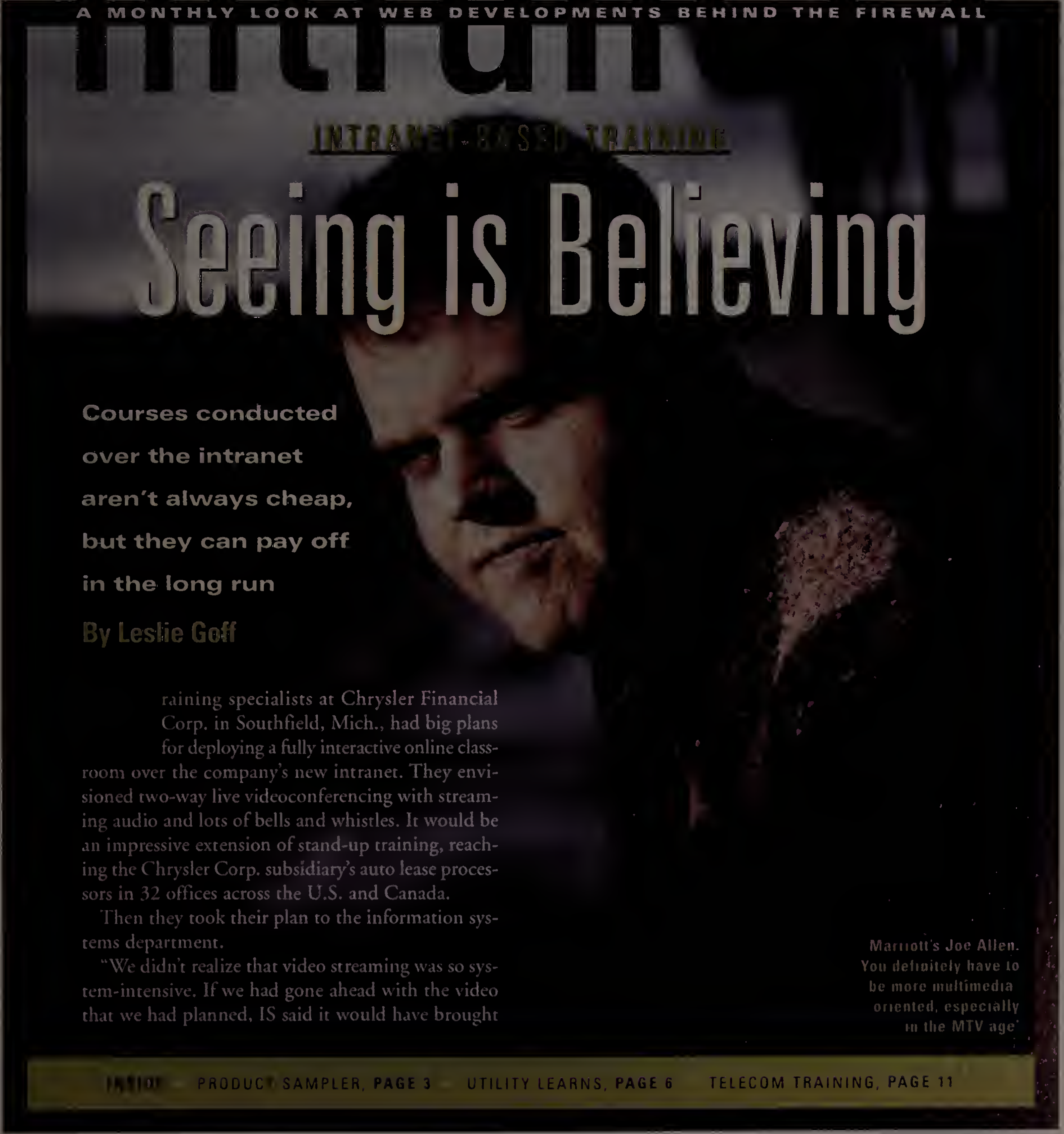
FROM THE EDITORS OF
COMPUTERWORLD
VOLUME 3, NUMBER 3
MARCH 23, 1998

Intranets

A MONTHLY LOOK AT WEB DEVELOPMENTS BEHIND THE FIREWALL



INTRANET-BASED TRAINING

Seeing is Believing

Courses conducted over the intranet aren't always cheap, but they can pay off in the long run

By Leslie Goff

raining specialists at Chrysler Financial Corp. in Southfield, Mich., had big plans for deploying a fully interactive online classroom over the company's new intranet. They envisioned two-way live videoconferencing with streaming audio and lots of bells and whistles. It would be an impressive extension of stand-up training, reaching the Chrysler Corp. subsidiary's auto lease processors in 32 offices across the U.S. and Canada.

Then they took their plan to the information systems department.

"We didn't realize that video streaming was so system-intensive. If we had gone ahead with the video that we had planned, IS said it would have brought

Marriott's Joe Allen. You definitely have to be more multimedia oriented, especially in the MTV age'

INSIDE PRODUCT SAMPLER, PAGE 3 UTILITY LEARNS, PAGE 6 TELECOM TRAINING, PAGE 11

INTRANET-BASED TRAINING

Continued from page 1

the offices to their knees," says Don McCloud, training and personnel programs manager.

The Chrysler Financial team is proceeding instead with a scaled-down version of the original idea, opting for one-way rather than two-way video streaming and dispensing with the notion of video cameras attached to every user's PC. But team leaders are no less convinced that the intranet is an ideal platform for delivering classroom-quality training.

The vast majority of the Fortune 500 have reached the same conclusion, according to research by The Masie Center, an online learning think tank based in Sarasota, N.Y. In a recent survey, 83% of the 350 respondents from the Fortune 500 said they will launch intranet-based training pilots this year. Despite bandwidth limitations and a significant up-front development commitment, they will test a vast array of online courses from live broadcasts to just-in-time, self-paced tutorials.

> **"YOU HAVE TO BE flexible. This is an evolving technology, and there will be a lot of trial and error."**
>
> **JOHN FLYNN**
> **COMMONWEALTH EDISON**
> **(SEE STORY, PAGE 6)**

"Classroom training is a highly effective gourmet meal, and a lot of people are looking for fast food, cafeterias and home cooking because they can't afford gourmet for everyone," says Elliott Masie, president of The Masie Center.

From the training department's point of view, the intranet has emerged as a user-friendly, cost-effective training medium that reaches employees it couldn't otherwise get to with information that frequently grows obsolete before everyone can reach a classroom. From the IS department's perspective, training applications have emerged as a way to put real business applications on the intranet. These two seemingly contradictory drivers for intranet-based training converged in the second quarter of 1997, Masie notes, resulting in an explosion of user and vendor activity (see story opposite page).

Of course, not all end users will want to use intranet-based training, so some evangelizing is necessary to gain the support of management and trainees. And not all types of training are conducive to the online approach, which can be expensive and not garner immediate financial return.

But project leaders see intranet-based training applications as paths to reaching more employees with more training more consistently more of the time. They are easier to administer than traditional courses, reduce travel costs and time spent away from the office, and reinforce corporate policies and procedures in a unified message across the corporation. They lend a new credence to the idea of the autonomous, empowered knowledge worker.

SMART RESOURCES

At some companies where intranet-based training has been going on for a while, the idea of the knowledge worker has begun to take shape. The Bureau of National Affairs, Inc. offers a three-hour "Introduction to Capitol Hill" course. The government and business journal publisher in Washington offers the online seminar to new employees and its 1,800 journalists, customer service representatives, sales force and circulation staff, which can review it on an as-needed basis.

For example, a new reporter covering a recently introduced bill in Congress can use the online seminar to review how a bill moves through its paces before he even steps foot on the Hill. Whereas the classroom version of the course would rely on printed materials, such as examples of old bills, the intranet course links to a server where he can review the actual new bill, contact information such as the congressional offices of the sponsor and the Constitution articles on which the bill is based.

And instead of trying to recall congressional protocol from a class that he took maybe several months before or waiting for the class to be offered again, the reporter can refresh and prepare at the critical time. Moreover, the online seminar can accommodate all of the company's employees, such as proofreaders who need to fact-check articles, salespeople who need to understand the relevance of a journal to potential advertisers or customer service reps who need to answer questions about the content and focus of various publications.

"From a business point of view, having employees memorize the material is not our goal," says Nancee

Continued on page 6

PHOTOGRAPH BY TOBY BLACK

An Active Marketplace

User interest in intranet-based training has certainly not gone unnoticed by vendors, who are rushing to market with a plethora of development tools. In the first six weeks of the year alone, The Masie Center (www.masie.com), an online learning think tank based in Sarasota, N.Y., received announcements of 32 new products.

The market should consolidate this year, predicts Elliott Masie, president of The Masie Center, but products are now segmented into five different categories:

- AUTHORING TOOLS: used to create and code content.
- OPEN LEARNING ENVIRONMENTS: turnkey frameworks for developing, deploying and managing training over the intranet.
- CONTENT-SPECIFIC ENVIRONMENTS: frameworks tied to content libraries created by training vendors.
- TECHNOLOGY-SPECIFIC ENVIRONMENTS: frameworks tied to specific multimedia-enabling products.
- COLLABORATIVE ENVIRONMENTS: proprietary frameworks used to support live-distance learning.

Last year, companies spent between $60 million and $70 million on authoring tools as they prepared pilot projects to convert their training programs to intranet form. This year should be the year when online learning environments, especially collaboration environments, take off, Masie says. "That's the arena where the dollars are the most serious. Companies are looking at spending from the high teens to seven figures for a knowledge management system."

Across all product segments, Masie says he expects more and more vendors to start offering consulting and other services along with their products.

PRODUCT SAMPLER

AUTHORING TOOLS

Allen Communications
QuestNet Plus
Salt Lake City
(800) 325-7850
www.allencomm.com/software/quest
Selected for Marriott's payroll processing course on the intranet.

Asymetrix Learning Systems, Inc.
ToolBook
Bellevue, Wash.
(425) 637-5883
www.asymetrix.com/products/authoring.html

Macromedia, Inc.
Authorware
San Francisco
(415) 252-2000
www.macromedia.com/software/authorware
Selected by Commonwealth Edison's nuclear power division for intranet-based software training.

OPEN LEARNING ENVIRONMENTS

Lotus Development Corp.
LearningSpace
Cambridge, Mass.
(617) 577-8500
www2.lotus.com/products/learningspace

Oracle Corp.
Oracle Learning Architecture
Redwood Shores, Calif.
(415) 506-8768
ola.us.oracle.com/html/visitor_home.html

WBT Systems
TopClass
Dublin
(353-1) 670-4725
www.wbtsystems.com

CONTENT-SPECIFIC LEARNING ENVIRONMENTS

CBT Systems Ltd.
CBT Campus
Menlo Park, Calif.
(800) 387-0932
www.cbtsys.com

NetG SkillBuilder
SkillVantage Manager
Naperville, Ill.
(800) 265-1900
www.netg.com

AUDIO AND VIDEO ENVIRONMENTS

Real Networks, Inc.
RealSystems 5.0 Intranet Solutions
Seattle
(206) 674-2303
www.real.com/server/intranet/index.html
Selected by 3Com for the addition of streaming video and audio to all of its intranet-based training courses.

VDOnet Corp.
VDO Live On-Demand
Los Gatos, Calif.
(415) 846-7700
www.vdo.net

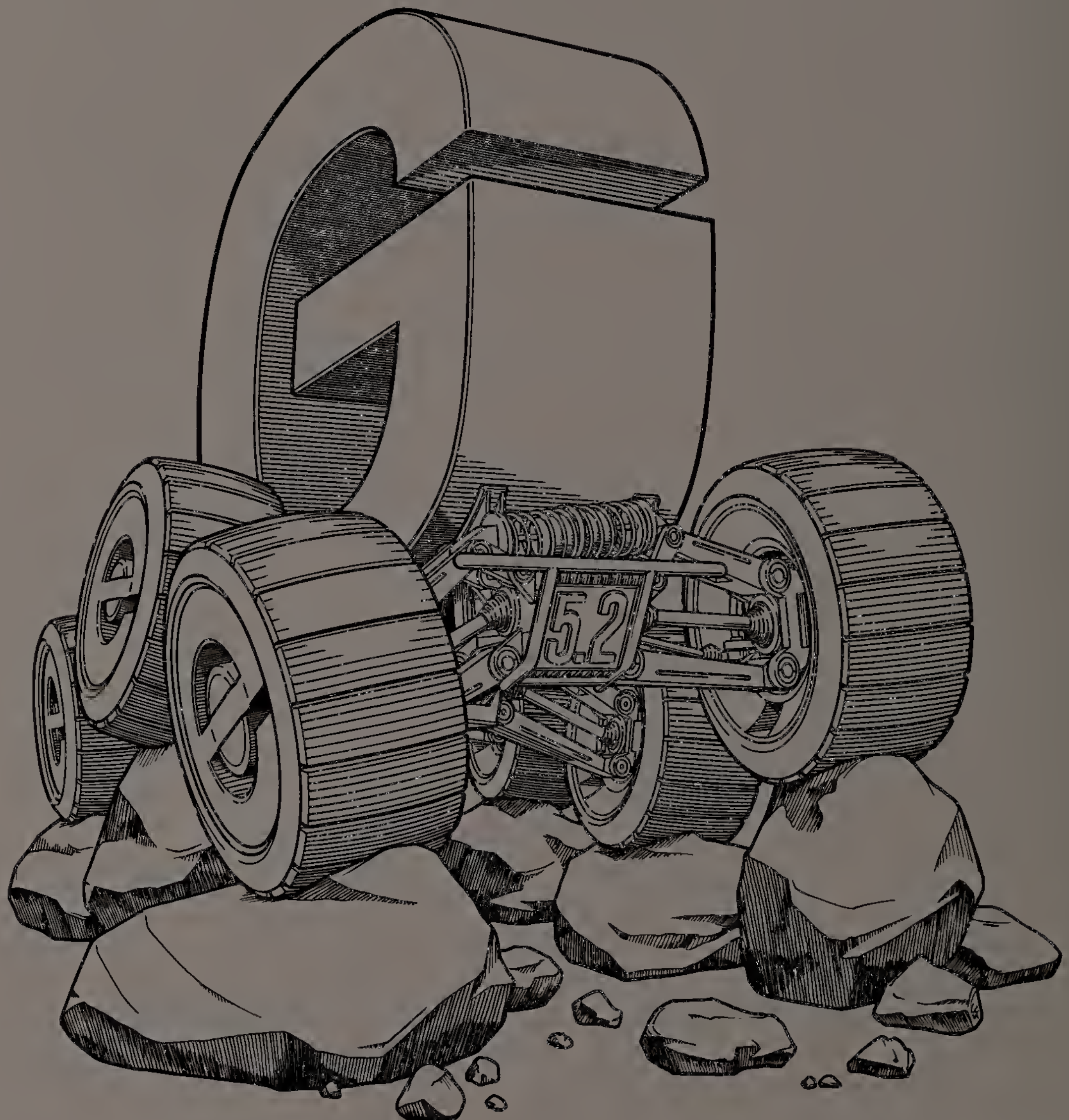
COLLABORATIVE ENVIRONMENTS

Centra Software, Inc.
Symposium
Lexington, Mass.
(617) 861-7000
www.centra.com

DataBeam Corp.
DataBeam Learning Server
Lexington, Ky.
(606) 425-3500
www.databeam.com/products/index.html
Used by Siemens Business Communications (see story, page 11).

Ilinc
LearnLinc I-Net
Troy, N.Y.
(518) 283-8799
www.ilinc.com
Selected for Chrysler Financial's lease processing software course.

COVER PHOTOGRAPH BY CHRIS HARTLOVE



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*1997 CNI research evaluation of Novell GroupWise, Lotus Notes and Microsoft Exchange

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www.novell.com/groupwise/allterrain

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Continued from page 2

Simonson, a training specialist at The Bureau of National Affairs. "We want to give it to them so they have it at their desks when they need it. We see [intranet-based training] as online resources for knowledge workers."

Networking vendor 3Com Corp. in Santa Clara, Calif., started training over the intranet more than 18 months ago and already has 70 courses online. They have evolved from an initial course on "How to Use the Intranet" to marketing and sales courses such as "Virtual Sales Kits" for major product lines and tutorials on subjects such as "How to Work With Our Channel Partners." Each functional business unit, from customer support services to human resources to corporate communications, has at least some intranet-based courses.

The courses themselves mainly consist of Microsoft Corp. PowerPoint presentations once used in live courses that have now been hyperlinked. This quarter, 3Com is adding streaming audio and video, using Real Networks' RealMedia 5.0 environment, says Scott Baker, director of Web services in 3Com's Global Information Services group. Users will have the option of selecting the pared-down PowerPoint version of the course or a multimedia version, accommodating each employee's interests and style of learning, available time, bandwidth and desktop configuration.

"The company is moving toward a Web-centric communications model, and our employees understand that, so we've had heavy usage," Baker says. "As we go along we'll probably reduce our live courses and replace them with online learning."

EASY PICKIN'S

For early intranet-based training pilots, technical training for IS and end users is the "low-hanging fruit," Masie says, because the content is procedural, it changes frequently and everyone in the company needs it at some point.

The pilot at Chrysler Financial, for example, will deliver training in new lease processing software to 250 geographically dispersed workers. The corporate finance division of Marriott International, Inc. in Bethesda, Md., will roll out an intranet-based course on its proprietary payroll processing system this year. Commonwealth Edison Co., a Chicago-based utility, is developing an intranet-based course for inventory management software used in its nuclear power division (see story below).

Those companies are in the throes of sorting out the content and technical issues associated with putting a class online. These include struggling with bandwidth, breaking the material down into manageable "chunks," accommodating PCs of varying capacities and choosing authoring tools and online learning environments. All require the input of closely integrated teams of IS staffers, trainers, business unit managers and end users, as well as outside help if a company lacks the expertise (see story online at www.computerworld.com/intranets).

At Chrysler Financial, the training team learned a valuable lesson, says Karen Cowan, a training specialist who reports to McCloud: "You have to get IS involved very early in the process."

In Marriott's corporate finance division, Joe Allen, a performance support and training specialist who has a hybrid background in education and technology, is leading the development of an intranet-based payroll processing course. As many as 750 people attend the three-day live version of the course

Utility Plugs into Intranet-based Training

Commonwealth Edison's first intranet-based training project goes to the core of its nuclear power division's operations.

The course is on the division's inventory management software, which enables engineers to track and order safety components required in the highly regulated nuclear power industry. Originally, the course was distributed via CD-ROM, but that didn't work out as anticipated, says John Flynn, a multimedia training specialist in the division's production training center in Wilmington, Ill.

"The LAN administrators at six different sites were supposed to put the CD-ROM on their LANs, and hopefully the course would be distributed out to the rest of the company," Flynn explains. "But each site [configuration] was somewhat different, and users could never find it on the LAN, and if we had an upgrade or some minor changes, we would have to redistribute the CD-ROM. It was just too cumbersome to manage."

The CD-ROM, developed using Macromedia, Inc.'s Authorware content creation and coding tool, was only two years old when Flynn and

THE TEAM developing Marriott's intranet-based payroll processing course includes (from left):
Rolaine Johnson, Dave Wood, Carol Anderson, Rodanthi Zaharopoulos, Gladys Salazar, Joe Allen, Terry Holbrook and Jasmin Islam-Smith

per year because of attrition and turnover, as well as the hotel chain's aggressive merger and acquisition activity. When the online version debuts later this year, that number could drop off significantly, resulting in cost savings and increased productivity.

Key to getting users on-board: deploying new PCs for employees; possibly upgrading intranet servers and individual PCs to handle the application; solid instructional design; and a simple yet compelling presentation, including simulations and exercises, Allen notes. He declined to reveal costs. "You definitely have to be more multimedia-oriented, especially in the MTV age," Allen says. "Users get so much flash and glitter on TV that they expect it on their computers, too. But I know what the technical limitations are in delivering it. We'll have sound effects and audio to enhance the experience, but we won't have any video because not all of our PCs can accommodate it, and we don't want to deter employees from using the course."

While intranet-based training promises many advantages, it's not without drawbacks. It isn't particu-

Continued on page 10

his team decided to convert it to an intranet-based course. Determined not to face the same dilemma again two years later and considering a recommendation from a consultant, they contacted another company where intranet-based training had already taken off. They visited the company, Boeing International Corp., for a benchmarking session, which paid off in a number of ways, Flynn says.

Besides providing insight into the development process, Boeing's crew passed along technical tips that enabled Flynn's team to get its intranet course up and running in under a week. For example, team members learned that they had to reconfigure six Multipurpose Internet Mail Extension, or MIME, types in the operating system so the Web server could process necessary commands from Authorware. "That saved us at least two or three weeks and a lot of phone calls," Flynn says. They also learned how to use Authorware to convert the existing course to accept TCP/IP commands so it would run over the intranet.

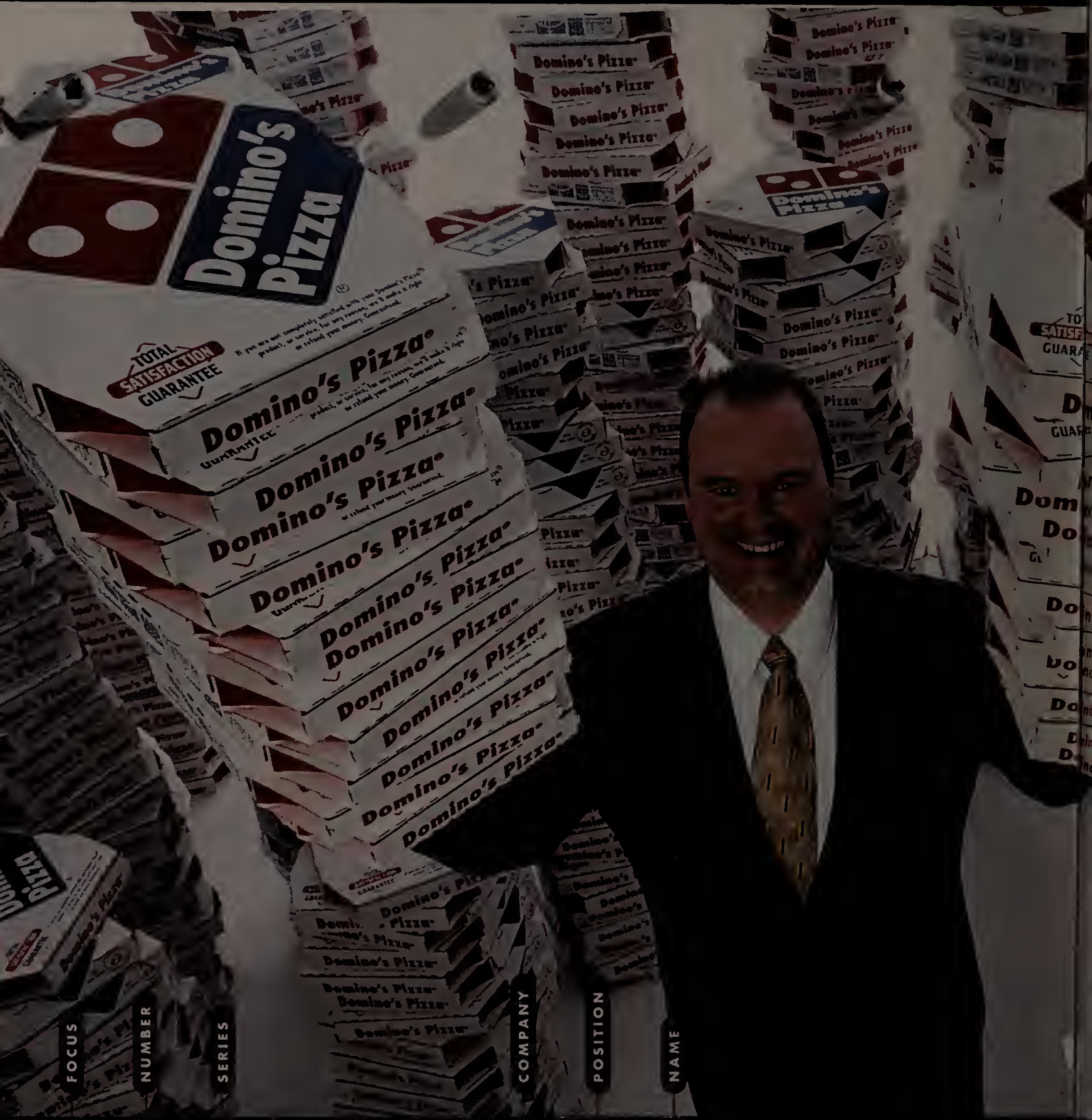
Flynn declined to provide costs and said it was too early to assess savings.

Flynn and his team are now assessing whether to put a centralized training library system in place, what future hardware requirements will be and what training quality standards must be implemented.

"You have to be flexible. This is an evolving technology, and there will be a lot of trial and error," Flynn says. "We hope we're making the right moves, but basically we're navigating in uncharted waters."

— LESLIE GOFF

PHOTOGRAPH BY CHRIS HARTLOVE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SOLUTIONS

Continued from page 7

larly well suited for conceptual ideas that demand face-to-face contact and body language to fully convey the lessons, such as how to negotiate or work well in teams. It also eliminates the social contact with peers that contributes to some learners' absorption and retention. And while reducing travel expenses by using the intranet is a big incentive for the company, employees who don't usually leave the office regard traveling from Omaha to a seminar in Boston or New York as a perk.

Moreover, the anticipated savings can take a while to materialize. The development time and costs are at least equal to, if not greater than, the costs of instructor-led training, says John Schulz, an instructional designer at IS consulting firm Cara Corp. in Oak Brook, Ill. Depending on the richness in multimedia and functionality, the authoring tools and the infrastructure requirements, an intranet-based course might start in the four figures for a basic conversion of classroom content to a hyperlinked PowerPoint presentation. It can range to a seven-figure commitment for high-bandwidth, two-way live video streaming.

Delivering training over the intranet may not be cheaper than classroom training initially, but those companies trying it believe that over time it will be more cost-effective. Chrysler's McCloud notes that training expenditures will remain the same this year, but the intranet project reallocates the budget "into value-added activities" such as course content development, instead of pure costs such as travel expenses.

Designing a course may be more involved than it seems. It requires analyzing how a job is performed and how the current training is achieved; identifying course objectives; creating the lesson plan; developing storyboards; and adding the graphics and multimedia elements, explains John Flynn, a multimedia training specialist in the production training center at Commonwealth Edison's nuclear division in Wilmington, Ill. Development time and assembling the requisite staff to perform each of these steps are not inexpensive propositions. Add-on costs can include consulting help and professional talent for such elements as voice-overs.

TRAINING TIPS

- **PLACE A CLEARLY VISIBLE** training link on the intranet home page, and don't force users to drill down several times to find the training relevant to them.

- **DESIGN INTRANET-BASED** training courses for the lowest common desktop in the company.

- **WORK CLOSELY WITH** corporate communications to evangelize the availability of intranet-based training and gain user interest.

- **IN ADDITION TO** the online courses, provide users with some instruction on how to use intranet-based training.

- **BREAK THE COURSE** content down into "chunks" that are no longer than two hours in length, particularly for courses that will use live, instructor-led video-streaming broadcasts. With self-paced courses, deliver the content in a nonlinear format that allows users to explore the material according to their personal needs and interests.

- **EVEN SIMPLE CONVERSIONS** of classroom training should be highly interactive, incorporating features such as simulations, quizzes and worksheets.

- **KEEP IN MIND** that some people learn best in a live classroom environment. Intranet-based training can't necessarily displace all live training.

THE EVENTUAL PAYOFF

The long-term savings come from reducing travel and employees' time away from the office attending classes. "Even eliminating one hour of training for 1,000 to 50,000 students can be quite a cost savings over a year," Schulz says.

Intranet-based training also eliminates incremental costs incurred with computer-based training delivered on CD-ROM, Flynn notes. Commonwealth is converting a CD-ROM-based course on how to use the nuclear division's mission-critical inventory management package to an intranet-based course, largely because updating the material and redistributing CD-ROMs each time features are added or changed is time-intensive and expensive for both the training staff and the LAN administrators at remote locations (see story, page 6). Plus, The Bureau of National Affairs' Simonson notes, intranet-based training saves on paper for class handouts, manuals that have to be reprinted and distributed frequently and other materials.

In fact, Flynn estimates that intranet-based training could reduce yearly spending on live training by as much as one-third. "Consider that a new engineer at the company would have to go to a four- to six-hour class to learn how to use our inventory management package. If you figure the costs for his time, plus what the class costs, plus the travel costs, you've spent a lot before [the student] even walks in the door," he says.

Give the same engineer the option of getting the same course at his desk in several two-hour chunks at his own pace, Flynn adds, "and the savings begin to snowball."

Goff is a freelance writer in New York.

PROJECT: SIEMENS BUSINESS COMMUNICATIONS SYSTEMS, INC.

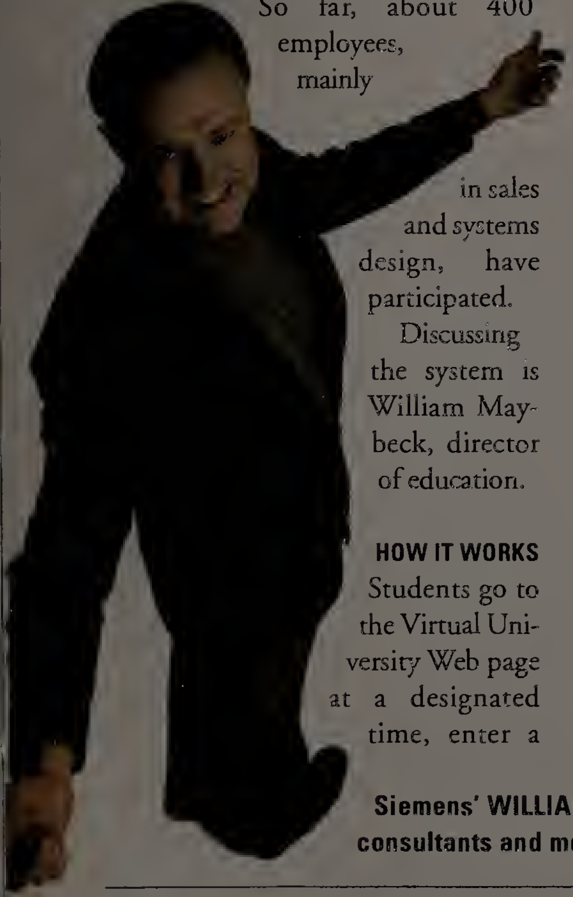
Virtual Training Saves $800K in First Year

By Linda Wilson

Onetime telephone maker Siemens Business Communications Systems, Inc. is transforming itself into a company whose products combine voice, data, fax and video. Doing so requires the Santa Clara, Calif.-based unit of Siemens AG to train its employees in new communications technologies, such as frame relay and TCP/IP.

Enter the Virtual University.

Accessed over the company's intranet, it joins students and a teacher in live courses that students — usually 16 to 22 at a time — take right at their desks. So far, about 400 employees, mainly in sales and systems design, have participated.



Siemens' WILLIAM MAYBECK: **'We can truly become consultants and mentors to our students'**

Discussing the system is William Maybeck, director of education.

HOW IT WORKS

Students go to the Virtual University Web page at a designated time, enter a password and dial in to an audio bridge. Then they follow along as the teacher goes through the material. Java applets, sent to students' PCs at the start of the class, are used for such things as hand-raising and document markup.

WHAT ABOUT VIDEO?

Siemens plans to add desktop video. "Video over the intranet suggests more bandwidth. We could do it today, but we need to make sure it doesn't interfere with all the internal e-commerce traffic — the mission-critical stuff," explained Al Gordon, program manager for Virtual University.

WHY OVER THE INTRANET?

It would have been harder to coordinate students' schedules for traditional classroom education — and expensive to pay for travel. The intranet approach also allows Siemens to easily update materials as the technology quickly changes. "We had to find a way to get this skill-building to our employees in almost just-in-time learning."

RETURN ON INVESTMENT

The system cost less than $50,000 to set up, including $15,000 for the server software. A five-day course costs about $230 per student (for long-distance connection charges and any materials downloaded from a Web site), compared with about $2,000 for a classroom environment (for airfare, hotel accommodations, auto rental, per diem and books). Siemens saved a total of $800,000 in 1997 but expects to save even more this year.

RESULTS

The Virtual University is more conducive to learning because courses are structured in bite-size modules, homework involves tasks in real-work settings and students return for follow-up sessions. "We can truly become consultants and mentors to our students as they apply the skill instead of being an instructor who delivers information on a crash-course basis," Maybeck said.

HOW THEY RATE

For the full interview with William Maybeck, RealAudio clips and screen shots, visit
www.computerworld.com/intranets

DISADVANTAGES

Web-based training is unsuitable for teaching behavioral skills because that usually requires role-playing. Future courses on topics such as management will combine classroom-based and intranet-based learning.

CHALLENGES

Both students and teachers must change their behavior. Because students take courses in real time but at their own desks, they need to concentrate and avoid interruptions. Teachers need to design courses that are very interactive because otherwise, they won't know whether students are paying attention. "You don't have the whites of their eyes in front of you," Maybeck said.

TOOLS

Two full-time teachers create courses covering eight technical subjects. For homework and tests, they often use packaged computer-based tutorials. Learning Server software from Data Beam Corp. enables the live sessions.

Wilson is a freelance writer in Glen Ellyn, Ill.

COMPUTERWORLD INTRANETS *is published monthly on the fourth Monday of the month as a supplement to Computerworld. Editor: Anne McCrory; Designer: Mary Beth Welch; Managing Editor: Kimberlee A. Smith; Computerworld Magazines Editor: Alan Alper. Phone: (800) 343-6474; E-mail: anne_mccrory@cw.com; fax: (508) 875-8931.*

PHOTOGRAPH BY JOHN HARDING

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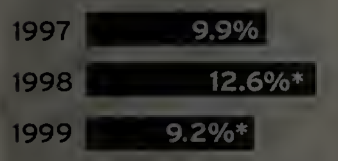
MILLENNIUM COST

Year 2000 spending as a percentage of IT budgets



* Projected

Base: CIOs at 488 North American companies

Source: Deloitte & Touche LLP, New York

Euro a big problem

The Information Technology Association of America (ITAA) in a white paper says the euro problem is as pressing as the year 2000 problem and is urging companies to address the issue as soon as possible. Countries including France, Austria, Spain, Finland and Germany are expected to participate in the single European currency, which is to be implemented next year. The ITAA said many of today's computers aren't equipped to recognize the euro, so any company with computer billing systems will likely be affected. The white paper is available at *www.itaa.org*.

Zooming in on IT jobs

Online recruiting sites continue to add value to help job seekers wade through the thousands of jobs posted on the Internet. CareerMosaic, managed by Bernard Hodes Advertising, Inc. in New York, last week added a Jobs Radius Search feature to its site (*www.careermosaic.com*). Radius Search lists all jobs available within a desired distance from any ZIP code entered.

Services hunt talent

Service firms will be more aggressive in their plans to hire information technology workers this year, according to a recent survey of 430 businesses by Coopers & Lybrand LLP in New York. In fact, last year, service firms hired more workers than they planned, while product-oriented companies hired only one-third of the workers they anticipated.

Farming out everything but IT

▸ *TopsyTail focus: client data, product ideas*

By Julia King

THE TOPSYTAIL CO. has only a handful of employees, but each year the privately held Dallas-based novelty company rings up hundreds of millions in sales.

The merchandise, which is targeted primarily at young girls, ranges from hair accessories, jewelry and dolls to whatever other new products the company's president, Tomima Edmark, happens to think up.

TopsyTail outsources almost everything to do with its business, from demand forecasting and product manufacturing to packaging, shipping, advertising and customer service. The one exception is information technology.

"I think it is extremely dangerous, because in this day and age, information is the most valuable asset a company has," said Edmark, a former large-systems salesperson at IBM who founded TopsyTail in 1989.

So 40-year-old Edmark maintains the company's extensive client database of drug stores, toy merchants and other retailers and all financial information in-house. The company processes invoices and other financial information in a computing environment of networked PCs. TopsyTail's outsourcing, meanwhile, allows Edmark to focus on dreaming up new products.

> **"It is extremely dangerous [to outsource IT] because . . . information is the most valuable asset a company has."**
> **– Tomima Edmark, TopsyTail founder**

"My goal is to keep things as simple as possible," Edmark said. "If I didn't outsource, I would be so bogged down that I couldn't function and be doing what I do best."

TopsyTail founder Tomima Edmark, shown here wearing the TopsyTail barrette, says outsourcing most business functions frees her to work on products

Increasingly, other companies are reaching the same conclusion. More than ever before, they are delegating IT-intensive functions, such as human resources, payroll, travel and logistics functions to outsourcers, which are in turn setting up special practices to handle the boom in business.

Price Waterhouse LLP, for example, has set up units to provide real estate manage-

TopsyTail, page 44

Hospital finds remedy for Y2K bug

By Thomas Hoffman
Miami

INDUSTRYWIDE cost containment is making it tough for hospitals to hire high-priced year 2000 contractors to fix code written in obscure medical software languages such as ADS-Plus.

One institution — Jackson Memorial Hospital here — believes it has found an answer.

The 1,567-bed hospital has hired a small Boca Raton, Fla.-based contractor, Future Technology Today, which claims it can build automated software conversion tools to fix the hospital's 1.9 million lines of date-sensitive ADS-Plus code. And it will cost only $800,000. In the hospital industry, every year 2000 patient is different, of course, but Jackson Memorial's efforts would appear to streamline the process.

THOMAS HOFFMAN

Jackson Memorial MIS director Raymond Beerman: Future Technology CEO Richard Bernstein is "another Bill Gates"

Others have cited higher costs. University of Kentucky Medical Center in Lexington contracted with Boston consultancy Keane, Inc. to do a $600,000 assessment for its similarly sized ADS-Plus system. In another case, The Hospital of St. Raphael, a 511-bed acute care facility in New Haven, Conn., is in the midst of a $4.7 million millennium project started in 1996 to fix 80,000 lines of IBM mainframe and Unix code [CW, March 2].

Overall, only 21% of hospitals have launched year 2000 proj-

Hospital, page 44

YEAR 2000

Federal costs are rising but 'under control'

By Matt Hamblen

THE FEDERAL government's price tag for millennium bug fixes may have leaped 20%, according to a budget agency's report, but President Clinton's year 2000 czar said he believes "costs are under control."

Despite that statement of confidence, John Koskinen, chairman of the President's Council on Year 2000 Conversion, also said he expects estimates for the federal government's final bill for millennium bug fixes to continue to rise.

"I don't know if there's an easy way to prognosticate about cost, but costs will probably continue to go up somewhat," Koskinen said in a March [illegible] interview.

That statement came right after the Office of Management and Budget (OMB) in Washington issued a quarterly update on

Federal, page 44

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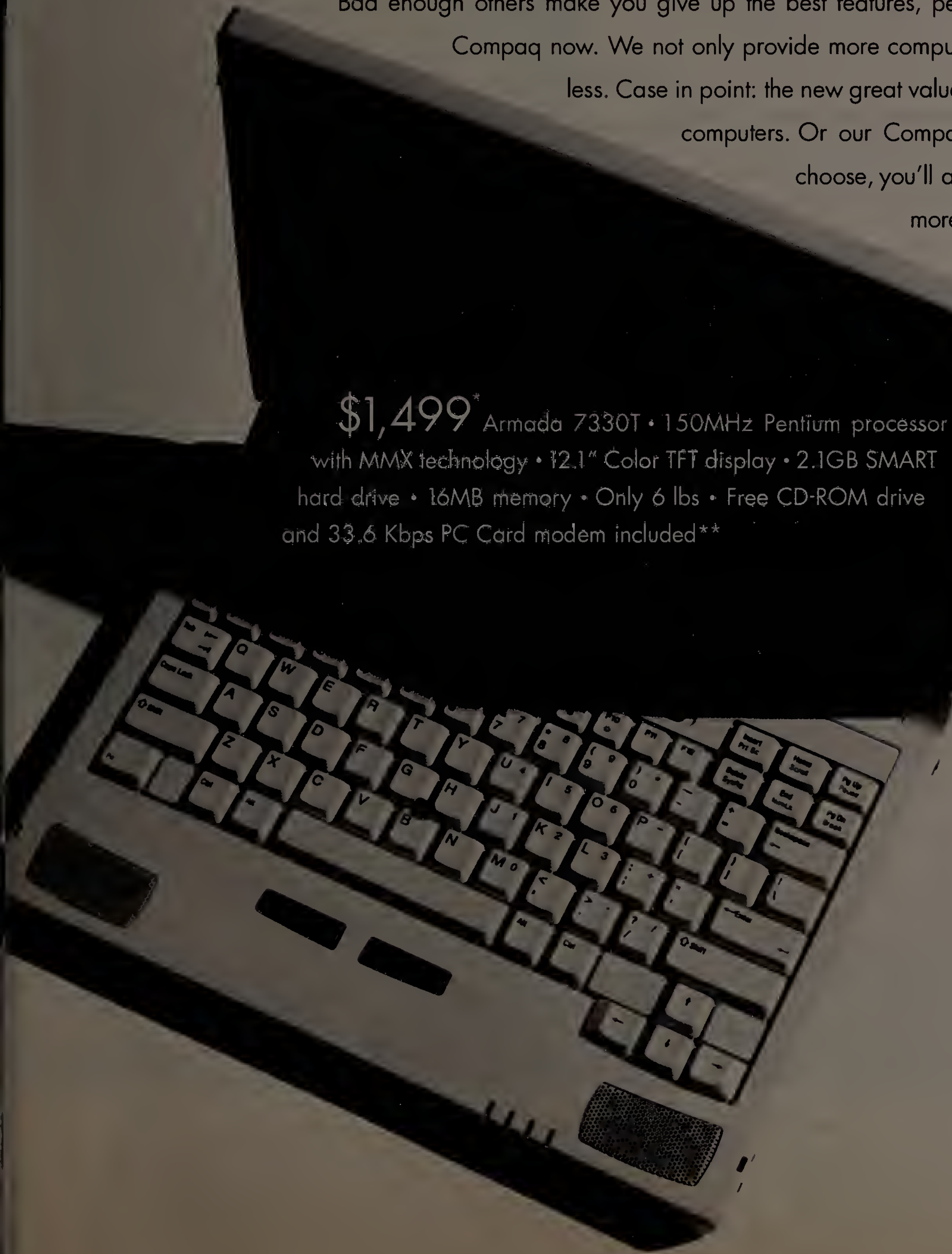

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Merger could bring call center/sales integration

By Kim Girard

THE WEALTH of information collected by corporate call centers is rarely shared in a meaningful way with sales managers. But that tide may be turning.

Siebel Systems, Inc.'s recent $461 million deal to buy Scopus Technology, Inc. in Emeryville, Calif., will let big corporate customers use one vendor to more tightly integrate sales force automation applications with the call center/customer service. The deal was announced March 2.

For users, that could mean more opportunities to cross-sell, better target customers and find areas of missed opportunity.

ON TOP

Analysts said the deal makes San Mateo, Calif.-based Siebel, a software maker that helps sales teams track clients and manage projects, the market leader. Next in line are Santa Clara, Calif.-based Vantive Corp., Aurum Corp. — now a subsidiary of The Baan Co. — and Clarify Corp. in San Jose, Calif.

Throughout the industry, companies are hustling to make their applications more compatible with one-stop shopping via partnerships. "The fewer vendors [that companies] have to deal with, the better," said Chris Selland, an analyst at The Yankee Group in Boston. "Just like with networking gear — a few years ago, there were many vendors. Today, you can call Cisco [Systems, Inc.] and they'll have everything you want."

"We've spent hundreds of hours of people time on [systems integration]," said Bill Hester, a senior product manager at Whirlpool Corp. in Benton Harbor, Mich. The company uses Austin, Texas-based Trilogy Development Group, Inc.'s applications for product price tracking. Whirlpool is reengineering its global business process, searching for a way to tie systems together to enhance sales with trade partners such as Sears, Roebuck and Co. and Circuit City Stores, Inc., he said.

"I want a common look and feel for the user," he said. "I don't want them to have 100 ways to use the computer. If there were one super company with a common interface, even if the pieces aren't world-class, I might go with them because it makes it easier for my users."

INFORMATION SHARING

Los Angeles-based LA Cellular already uses Scopus' software in its 700-seat call center, but it uses a proprietary sales force automation system. The company plans to take another look at Siebel now, said John Klustner, director of customer care and call center development at LA Cellular.

Valuable information shared between the call center and the sales force is limited today, he said. More information, such as whether a buyer owns a PC notebook and could use a wireless modem, might help a company increase sales, he said. □

TopsyTail hangs on to IT

CONTINUED FROM PAGE 41

ment, human resources, logistics and finance services.

By 2000, the outsourcing market for those and other so-called business process services is expected to grow to $250 billion, according to G2R, Inc., a Mountain View, Calif., consultancy.

"What's driving the business process outsourcing trend is that service providers can often add value to a process while either earning money or cutting costs for a company," said Susan Scrupski, who writes an outsourcing newsletter and is a partner at Arc Consulting in Tinton Falls, N.J.

Yet decisions about what to outsource still vary widely from company to company. For example, Atto Technology, Inc., a privately held electronic parts company in Amherst, N.Y., outsources the design, layout and manufacture of its line of SCSI boards for Apple Computer, Inc. computers. It also farms out development of the software drivers that come with the boards. But the information technology it uses to run the business, including an Internet-based electronic-commerce application, is developed and maintained in-house.

TopsyTail inventor and Seattle native Tomima Edmark was a childhood playmate of Microsoft founder Bill Gates. While working at IBM, she decided she wanted to start her own company. Edmark was standing outside a movie theater waiting to see *When Harry Met Sally* when she wondered whether it was possible to turn a ponytail inside out.

"The information technology that our business uses is so key to the business that I just didn't want to hand that off externally," said Tim Boser, vice president of operations at Atto.

At TopsyTail, Edmark said outsourcing enables her to focus on researching and developing new products, such as the Heavenly Headwear line of collapsible hats she is getting ready to launch this year.

"I did research and found that people don't wear hats because women's hairstyles get wrecked and men's heads get too hot," she said. The solution: a patented foam system that floats a hat above the scalp. □

Hospital finds Y2K remedy

CONTINUED FROM PAGE 41

ects, according to a survey of 1,700 hospitals by Gordon & Glickson, a Chicago-based law firm.

Raymond Beerman, MIS director at Jackson Memorial, said he considers his consultant's charge a good deal. He said an unspecified vendor responded to the hospital's request for proposals with a $3 million bid.

Although most hospitals opt for a buy-vs.-build approach to software, many institutions still run software written in obscure languages such as ADS-Plus and Mumps, said John Piescik, a health care consultant at American Management Systems in Fairfax, Va.

ADS-Plus is a fourth-generation language written in the 1970s for health care customers by IBM and Baxter International, Inc. in Deerfield, Ill. In 1980, Jackson Memorial purchased the development environment, then known as IBM Patient Care System and later purchased from IBM by Atlanta-based HBO & Co.

The hospital built 100 applications, including its core pharmacy and laboratory systems.

In need of a contractor to help it fix its systems, Jackson Memorial, a nonprofit hospital, last year put out a request for proposals to which seven vendors responded.

Two vendors, including Future Technology, claimed they could fix the hospital's ADS-Plus environment.

Future Technology, it turns out, not only had the lower bid, but it also has experience converting ADS-Plus environments for UCLA Medical Center in Los Angeles and OSF Healthcare Systems in Peoria, Ill.

ADS-Plus "is a unique creature, but we can build our own flavor compiler that recognizes it," said Richard Bernstein, president of Future Technology.

GOOD NEWS

That's good news for Jackson Memorial, which expects to have all its systems converted by the end of October, said Beerman, a 20-year hospital veteran and a retired Air Force major.

It also is a relief for hospital clinicians such as Linda Palewicz, a registered nurse who counts on the pharmacy and laboratory systems for accurate reports for patient medications.

"We're confident about the direction our MIS group is heading with the year 2000 problem," Palewicz said. □

Federal Y2K costs rising but 'under control'

CONTINUED FROM PAGE 41

the government's bill for year 2000 fixes, putting the total at $4.7 billion for two dozen federal agencies. That number was up $800 million from the previous OMB estimate reported in November.

Koskinen, a former OMB deputy director, started in his new post on March 9 and didn't write the 20-page report. But he will help produce future quarterly updates.

After studying the report, Koskinen said the government as a whole is "making real progress and making sure we're devoting the resources" to meet the year 2000 deadline. Although the cost is substantial, it isn't so high that it will inhibit government business, he said.

New year 2000 czar John Koskinen says higher y2k costs won't inhibit government business

LOW GRADES

Six of 24 federal agencies studied were found in the OMB report to be "making insufficient progress." They are the departments of Transportation (which includes the Federal Aviation Administration), Labor, Education, Energy and Health and Human Services and the U.S. Agency for International Development. Independent agencies such as the Federal Deposit Insurance Corp. aren't included in the report.

The percentage of 7,850 mission-critical systems that are compliant jumped to 35% from 27% in November's report. Forty-five percent of the systems are still being repaired, while about 15% are still being replaced, and 5% will be retired.

All the agencies have independent verification programs under way, which has paid off. Some have found mission-critical systems thought to be compliant that aren't, the OMB said.

The Department of Defense is spending the most to fix systems, $1.9 billion of the total. The Department of Treasury, which includes the Internal Revenue Service, is second in spending, at $1.4 billion.

The OMB report said the FAA "continues to be at significant risk of system failure." □

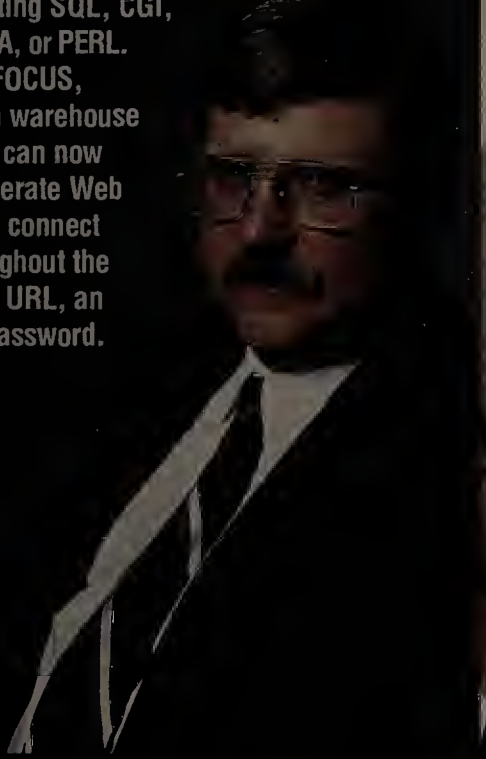
When business wants to unite the Web and the enterprise...

Business uses WebFOCUS.

"We found WebFOCUS to be a fast, cost-effective solution for deploying our data warehouse on the Web."

Gary Fisher, Manager Strategic Systems, Sony Electronics Inc.

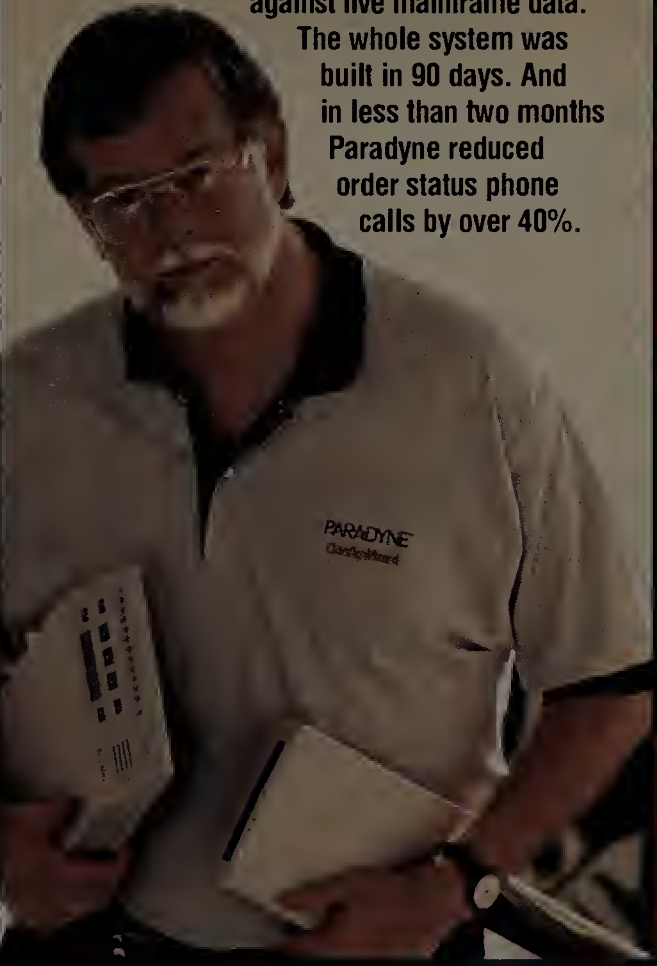
Sony Electronics Inc. decided to build a data warehouse to help manage and control its inventory. To make the information easily available to users in over 20 states throughout the U.S., the company wanted to build Web front ends for reporting and analysis. The company needed software that had report writing features, supported drill down, graphics and complex, multi-pass database queries. Sony looked at a variety of Web-based tools ranging from the very complex and expensive to the simplistic and inexpensive. The company installed WebFOCUS and had reports on their Intranet in days and drill down reporting systems in weeks without writing SQL, CGI, HTML, JAVA, or PERL. Using WebFOCUS, Sony's data warehouse developers can now quickly generate Web reports and connect users throughout the U.S. with a URL, an ID, and a password.



"In less than two months, we reduced order status calls by 40%, enhanced customer relations, and stimulated new business by driving customers to our Web site."

Dan Bond, Data Warehouse Manager, Paradyne Corporation

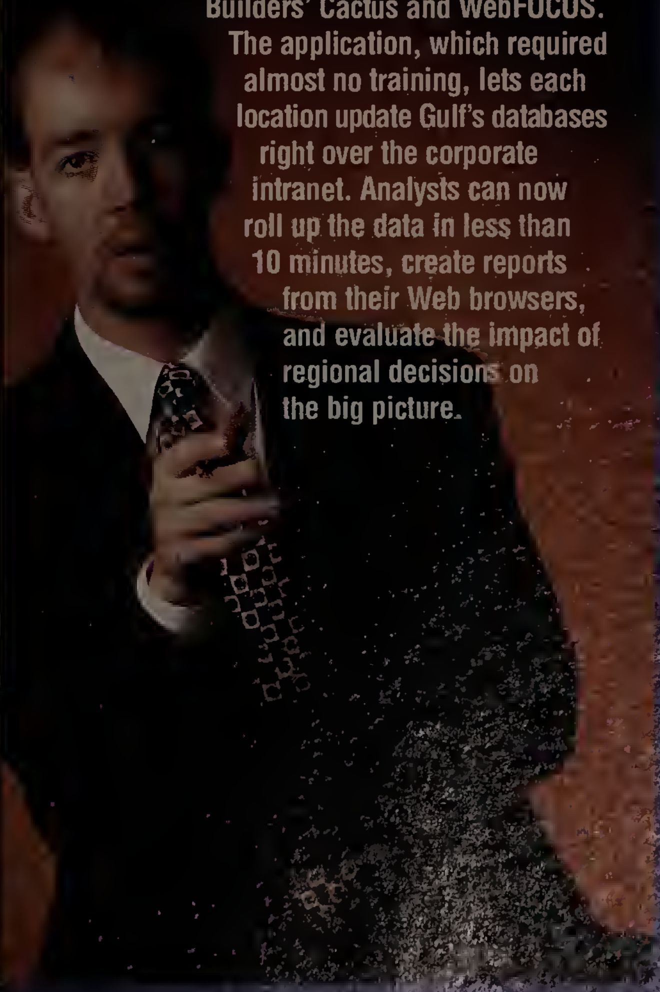
Using Information Builders EDA middleware and WebFOCUS reporting engine, Paradyne built a Web-based order status system that allows customers to launch dynamic queries against live mainframe data. The whole system was built in 90 days. And in less than two months Paradyne reduced order status phone calls by over 40%.



"With our new intranet-based decision support system we are able to roll up budget projections in less than 10 minutes."

Kevin Rasmussen, Expert Application Coordinator, Gulf Canada

In the oil and gas business, proactive monitoring of production and costs versus operating budgets is a mission-critical function. That's why Gulf decided it needed a faster way to collect and analyze this information from its field locations around the world. The solution... a Web-enabled data entry and reporting system using Information Builders' Cactus and WebFOCUS. The application, which required almost no training, lets each location update Gulf's databases right over the corporate intranet. Analysts can now roll up the data in less than 10 minutes, create reports from their Web browsers, and evaluate the impact of regional decisions on the big picture.



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The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

CyberCash merger

Electronic-commerce pioneer CyberCash, Inc. in Reston, Va., last week said it will merge with ICVerify, Inc., a transaction software vendor based in Oakland, Calif. The merger agreement is valued at about $50 million. CyberCash, which makes electronic-payment systems, said it will integrate ICVerify's products with its own. The merger is slated to be completed in May, according to officials from both companies.

Custom Netscape

Netscape Communications Corp. has announced the Client Customization Kit. The kit can be used by Internet service providers, OEMs and Internet content providers to customize and distribute the Mountain View, Calif., company's Communicator client and Navigator browser. It can be licensed free from Netscape.

Buying software

In the electronic world of the future, people are likely to hand off buying decisions to intelligent software, according to the IBM Institute for Advanced Commerce.

In a recent report, the research center predicted "a scenario in which billions of intelligent agents will roam the virtual world, handling all levels of simple to complex negotiations and transactions. . . . Profit-driven agents that can make money by offering services such as translation or data mining are expected to be the most prevalent form of this technology."

Web-based documents

IntraNet Solutions, Inc. in Eden Prairie, Minn., is shipping Intra.doc Management System 3.0. The product is an upgrade of the company's World Wide Web-based document management system, with enhanced security and Web browser-based administration. The software runs on Windows NT and Solaris servers.

Self-serve banking on the Web

By Sharon Machlis

NOW THAT Internet banking has become fairly widespread, Bank of America officials said they have moved to a new phase in online customer service: posting credit-card account data on the Web.

The move is part of a growing trend to let consumers check the status of everything from cleared checks to insurance claims online.

Citicorp, for example, also has announced plans to put credit-card account data on its site.

"The Web is being used as a utility to give customers what they want. And a lot of what they want is to self-service," said Scott Smith, principal analyst for electronic commerce at Current Analysis, Inc. in Sterling, Va. "I am definitely seeing an increase in the number of businesses adding those features to

Banking, page 48

• Quick-hit projects save time, money

Intranet apps applauded

By Carol Sliwa

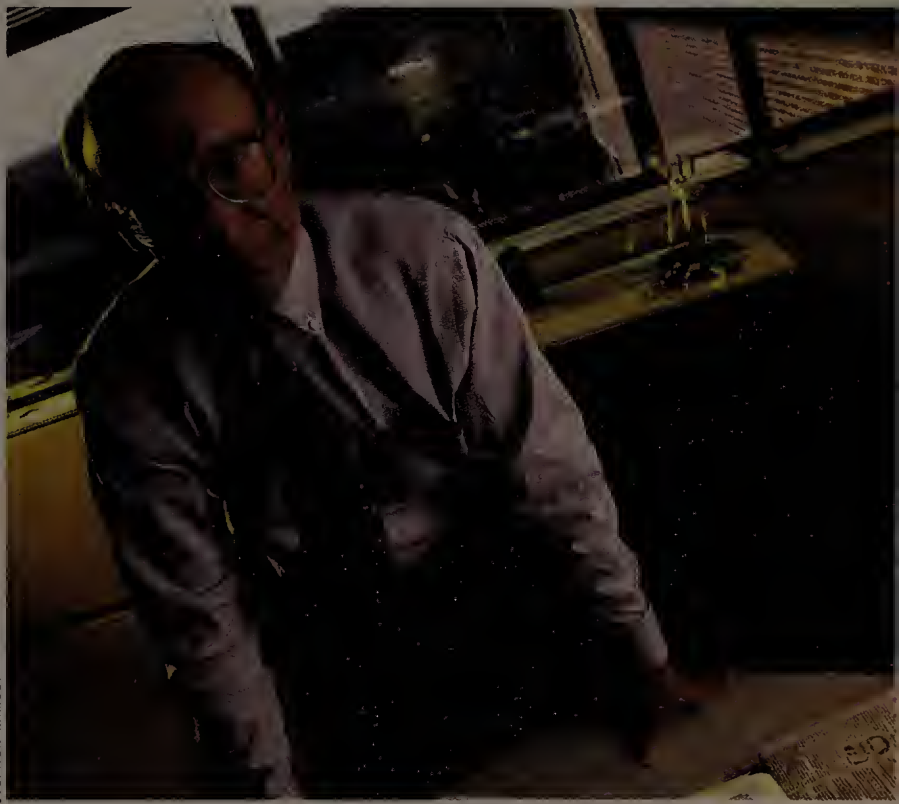
US WEST Communications, Inc. doesn't bother with a cost/benefit analysis for its Global Village intranet applications.

The company deploys quick-hit applications, which typically link an easy-to-use World Wide Web interface to one or more databases. The applications often don't require more than three months to develop and don't cost more than $100,000.

For instance, the Facility Check application that helps US West service representatives provide more accurate estimates of when telephone service will be installed took three months and less than $50,000 to develop.

BIG SAVINGS

The application saves the company an estimated $10 million by allowing it to provide quicker service at customer sites. It also helps the company shave minutes off customer order calls, eliminate repeat calls and reduce fines levied when US West can't meet pledged installation dates.



STEPHEN RAMSEY

US West Communications' David Laube prefers to do an after-the-fact assessment of an intranet application

"You don't want to do the typical analysis evaluation, 10-signatures routine for these projects because you'll waste all the time that you would have other-

Intranet apps, page 48

Free E-mail eases life for road warriors

▸ *Users like reliability; security a concern*

By Barb Cole-Gomolski

SHEHAM PARVIN likes free E-mail because it has been more reliable than his corporate E-mail account. Julie Blunden uses it to stay in touch with co-workers from the road.

Both forward their corporate electronic mail to a free Internet E-mail service from Hotmail, Inc. in Sunnyvale, Calif.

The "free-mail" lets road warriors get their messages from any Internet connection and retrieve mail from multiple inboxes in one place.

"One of the problems with the corporate E-mail system is that it is down so often," said Parvin, a chip designer at Aureal Semiconductor, Inc. in Freemont, Calif. "So I started using Hotmail as a backup."

In exchange for the free Internet-based account, users must put up with banner advertising similar to that seen on other World Wide Web sites.

Julie Blunden, regional director at Green Mountain Energy Resources LLC, an energy company in South Burlington, Vt., said she likes the ease of her free-mail account.

Blunden, who travels a lot for her job, said, "I'm usually checking E-mail at 11 p.m. from my kitchen table or from an airport waiting for a flight."

Free-mail, page 48

FREE INTERNET E-MAIL

Pros	Cons
▸ Available from any Internet connection	▸ Users have to view banner advertising
▸ Lets users access mail from multiple accounts in one place	▸ Most free-mail services don't provide built-in virus scanning
▸ Users' addresses stay the same even if they change jobs or Internet providers	▸ E-mail is typically sent unencrypted over the Internet

RECRUITMENT

Firms launch skills-specific Web sites

By Tim Ouellette

BUSINESSES INTENT on completing Web development projects may be able to staff up more quickly because of a change of direction by some temporary contracting agencies.

For example, Boston-based MacTemps, Inc., a PC and Macintosh staffing company, has spun off a separate business called Web-Staff in 16 cities across the country.

Other companies, such as Web Temps, Inc. in Philadelphia, provide World Wide Web staffing services exclusively.

Even recruiting companies that don't have separate Internet groups are trying to get into the game.

Manpower, Inc. now gives job hunters who submit resumes on its Web site (*www.manpower.com*) access to free online JavaScript training from

Recruiters, page 53

Banking on Web self-service

CONTINUED FROM PAGE 47

their sites." More airlines now let customers check frequent-flier account status on the World Wide Web, while brokerage houses let surfers check account balances and order status.

"It's the next natural step," said Sherri Silver, vice president of marketing service at Bank of America's credit-card group in Phoenix. "We need to keep up with how people are doing business."

The site uses Secure Sockets Layer encryption to safeguard data as it travels across the Internet.

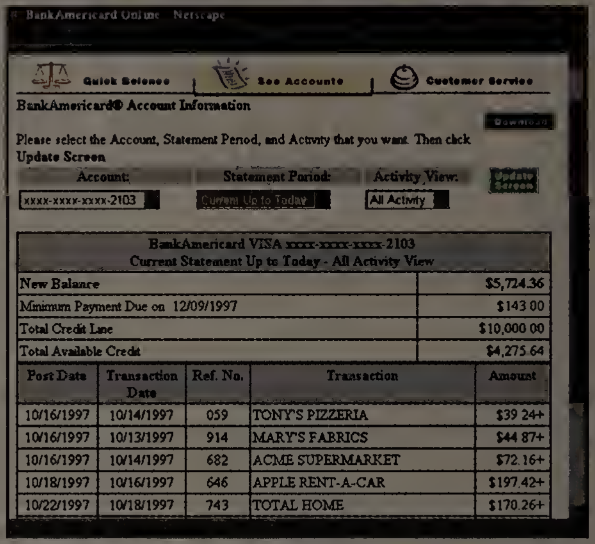
The bank's Web site lets BankAmerica credit-card customers check their available credit limit and current balance, and view seven months of statements. It is the first concrete result from a year-old alliance between BankAmerica Corp. subsidiary Concorde Solutions, Inc. and Hitachi Ltd. of Japan to develop Internet-based banking applications.

"We are happy with the way people are using this," Silver said, although she declined to give specific site traffic figures. The feature has been available since November.

Crawford and Co., an Atlanta-based insurance company with about 600 offices in more than 60 countries, is posting operations reports branch managers can access on the Internet. The company is using WebFocus software from Information Builders, Inc. in New York. But by the third quarter, Crawford and Co. plans to have benefits explanations online so customers can check claim information as well as submit claim applications online.

There is a double advantage, according to Jim Lenahan, director of data architecture: Customers can get the information they seek more quickly, and the company saves money because consumers are pulling data off a Web site instead of calling a toll-free number and using customer-service staff time. "It's more capabilities to our customers at less cost," Lenahan said. "It makes better business sense." Crawford hasn't hammered out specific estimates on how much it expects to save by offering the information online.

At Bank of America, the project's biggest technical challenge, like many online applications, was somehow tying data sitting on a legacy system into a Web front end, said Felix Seyferman, research and development director at Concorde Solutions. Bank of America may save money from posting account data on the Web — reducing calls to customer service representatives — but Silver said that isn't the impetus behind the service. "It's one of those competitive things we need to do," she said. "There's value in and of that." ☐



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Account: xxxx-xxxx-xxxx-2103
Statement Period: Current Up to Today
Activity View: All Activity

BankAmericard VISA xxxx-xxxx-xxxx-2103
Current Statement Up to Today - All Activity View

New Balance	$5,724.36
Minimum Payment Due on 12/09/1997	$143.00
Total Credit Line	$10,000.00
Total Available Credit	$4,275.64

Post Date	Transaction Date	Ref. No.	Transaction	Amount
10/16/1997	10/14/1997	059	TONY'S PIZZERIA	$39.24+
10/16/1997	10/13/1997	914	MARY'S FABRICS	$44.87+
10/16/1997	10/14/1997	682	ACME SUPERMARKET	$72.16+
10/18/1997	10/16/1997	646	APPLE RENT-A-CAR	$197.42+
10/22/1997	10/18/1997	743	TOTAL HOME	$170.26+

Bank of America's Web site uses SSL encryption to safeguard data

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Free-mail

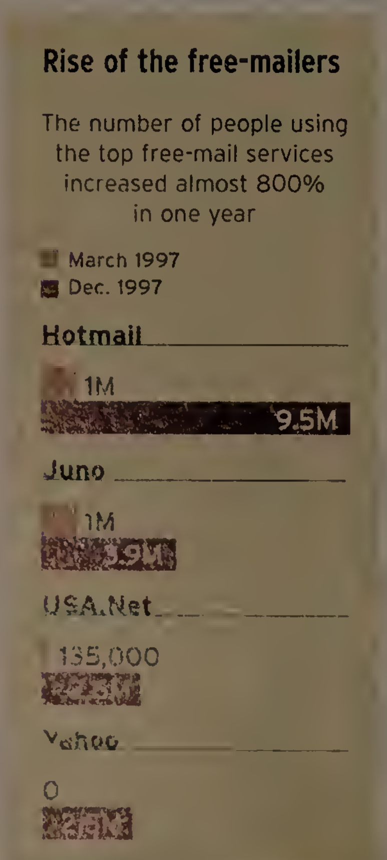
CONTINUED FROM PAGE 47

Armed with a wireless modem and the Hotmail service, she can get her messages anywhere, she said.

The use of free-mail is on the rise, said Eric Arnum, editor of the "Electronic Mail and Messaging Systems," a newsletter in Washington.

The leading free-mail vendors include Hotmail, which Microsoft Corp. bought in December, Juno Online Services LP in New York, USA.Net, Inc. in Colorado Springs and Yahoo, Inc. in Santa Clara, Calif.

The combined user base of the four vendors totaled just more than 2 million in 1996. By the end of last year, that number grew to 18.5 million.


Rise of the free-mailers

The number of people using the top free-mail services increased almost 800% in one year

"Just like the PC and the fax, free-mail taps into a grassroots need for communications that the IS staff doesn't have time for," Arnum said.

And if users switch Internet service providers for a better price, their E-mail address stays the same.

"It's like switching phone companies and keeping your phone number," Arnum said.

Perhaps, but IS managers generally frown on free-mail because it bypasses information systems security, virus scanning and message monitoring procedures. Free-mail accounts also tend to generate more spam than traditional corporate accounts, E-mail administrators said.

ON THE EDGE

Roy McCartney, manager of desktop applications at Mitsubishi Caterpillar Forklift America, Inc. in Houston, said using free-mail at work could be considered doing personal business on company time.

"If people came to us and wanted to do this, we would tell them no," McCartney said. He said his company provides E-mail accounts that are accessible from the Internet, so there is no reason for employees to use free-mail.

The battle between IS looking to quell free-mail use and users who like the convenience is likely to continue, Arnum said. IS could wind up blocking messages from free-mail services to prevent wasted time and block spam, he said. ☐

Intranet apps win user applause

CONTINUED FROM PAGE 47

wise gained by doing it fast," said David Laube, chief information officer at US West in Denver.

Instead, Laube prefers to assess applications after the fact to make sure there is a return on investment. Reductions in development time, employee time spent on paperwork and other factors kept returns for last year's projects hovering in the 1,000% range, he said.

SPEEDY APPS

Ford Motor Co. does cost/benefit analyses up front to ensure a project's business value. But the studies generally don't take long, and application development is speedy, according to Steven Scheerhorn, business liaison manager for the company's Web group.

That group developed more than 100 quick-hit applications for its intranet during the one-year period starting in June 1996. The average development time was less than two months; the typical cost was $30,000 to $50,000, Scheerhorn said.

Ford's Web and intranet application development unit now concentrates on more complicated projects — such as a leasing application that took five people less than six months to build — and leaves the quick-hit work to a Web Factory launched last September.

In the Web Factory, information technology staffers from Ford business units work with professional Web developers to finish an intranet application in eight weeks. A review committee selects the projects, and six to 10 people are assigned to work on each one.

"We needed a way to get the information and the technology and skills out to the rest of the community," Scheerhorn said. Business units gain training not only in writing their own quick-hit applications, but also in supporting them.

The applications also are cheaper to distribute because the interface is a browser, not a custom software application that an information systems staffer has to install on every desktop.

US West developers built gateways to all the company's major back-end databases. Programmers merely write to the gateways — a much simpler process than writing to the databases. And the Hypertext Markup Language-based interfaces aren't tough to write, saving more development time.

The Knight Ridder, Inc., newspaper chain sliced development time from 12 to 15 months down to three months by moving some applications to the Web, according to Tally Liu, the company's vice president of finance and administration.

The design process is shorter, and rolling out the applications is quicker because users don't need training on Web-based applications, Liu said. ☐

Snapshot

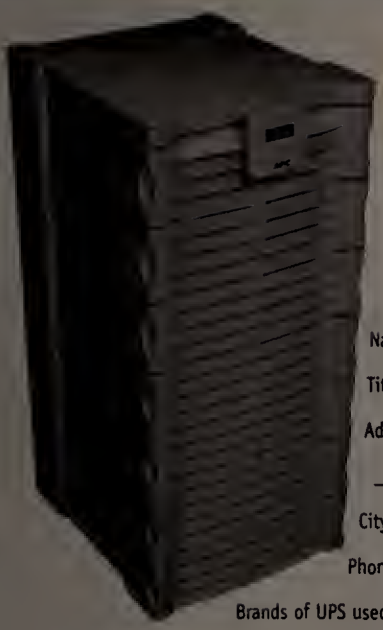
ONLINE SHOPPING CHOICES

Products people are likely to buy on the Web	
Software	77%
Books	67%
CDs	64%
Computer hardware	63%
Airline tickets	61%
Magazine subscriptions	53%
Concert/theater tickets	48%
Flowers	45%

Products people aren't likely to buy on the Web	
Insurance	60%
Food/drinks	55%
Financial services	53%
Clothing	48%

Base: 500 Internet users; multiple responses allowed

Source: Cybershoppers Research Report survey, conducted by Greenfield Online, Inc. (www.greenfieldcentral.com) for the Better Business Bureau



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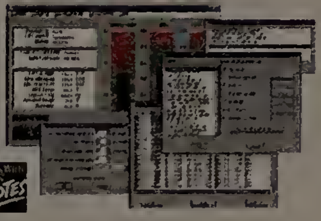

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Who's watching your network

Yacht racers delight: Results on Web site

By Jaikumar Vijayan

THINK BUILDING A Web site for your company is tough?

Try hosting one to track 10 yachts racing across 31,600 nautical miles of wide-open sea.

That is what the organizers of the Whitbread Round the World Yacht Race for the Volvo trophy have been doing since mid-September.

"The biggest challenge was the integration."

– Enrique Alvarez, Quokka Sports

Making the race available on the World Wide Web *(www.whitbread.org)* means having reliable data feeds, continuous hardware availability, the ability to scale to handle unpredictable numbers of visitors and the skills needed to make products from many vendors work together reliably.

"The biggest challenge was the integration," said Enrique Alvarez, director of operations at Quokka Sports, Inc. Quokka is the San Francisco-based publisher responsible for content, site design and management of the Whitbread site.

"The content is what makes a site like this compelling. . . . To put it up, though, we needed to get technology from big vendors like Tandem and Compaq and CompuServe and get it all together," Alvarez said. Tandem Computers, Inc. provides nonstop computers and high-availability servers to host the site. CompuServe, Inc. is the Internet service provider, and Compaq Computer Corp. provides PCs at the front end of the system for designers.

The Whitbread race is a grueling, nine-month odyssey in which some of the world's top sailors compete. It is organized by U.K.-based Whitbread Co. and co-sponsored by companies including AB Volvo, Marriott International, Inc., Sony Corp. and Tandem. The race started in Southampton, England, and will end there in May.

Live coverage via the Web is a first in the 25-year history of the race. The site features video clips, live audio and electronic-mail reports from on deck, plus other live statistics that bring the race closer than ever to sailing enthusiasts the world over.

The most recent race, in 1993-94, was televised in 177 countries and attracted an audience estimated at 2.6 billion people over nine months. This year, the Web site each day has generated more than 160,000 visitors, who have made about 4 million hits on the site per day. With the TV coverage, that makes the Whitbread race one of the most widely watched sports events ever.

In Brazil, where the race participants were recently, Michael Woods, race manager for the Whitbread, said, "These numbers are way beyond our best expectations. When we started talking about this site, we were hoping to get about 2 million hits per day."

Those numbers have a business benefit: a much wider audience for race sponsors to target with advertising and marketing, Woods said.

Each of the 10 competing sailboats are wired with state-of-the-art computer systems and satellite dishes. Rugged onboard PCs and digital cameras mounted on the main mast pump images via satellite directly to computers at Whitbread's race headquarters in England. A server there receives the live feeds, which are then sent to Quokka's headquarters in San Francisco.

***Silk Cut*, U.K., is one of 10 yachts competing in the Whitbread yacht race, which is being covered live on the Web**

Users who log on to the site can get updated race information every six hours, watch video clips and even participate in virtual races with the participants. ☐

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Recruiters launch skills-specific sites

CONTINUED FROM PAGE 47

the site. That way, the Milwaukee staffing giant knows exactly when the Java training is completed, and a worker can be placed on assignment.

The moves are part of an effort to keep up with the exploration of Web-related projects across different markets (see chart).

Unlike typical information technology staffing firms, Web-Staff recruiters know the ins and outs of Web page development and the skill sets needed to complete business-related Internet projects.

WEB-FOCUSED

More firms are cropping up that either do Web-only placement or take the same tack as Web-Staff and spin off a separate division, said Tim Waterloo, president-elect of the National Association of Computer Consultant Businesses in Greensboro, N.C. The organization represents more than 500 computer staffing firms nationwide.

THE WEB: A JOB GENERATOR

Why contract firms are creating Web-specific placement divisions:

- 67% of all Web sites are commercial, up from 5% in 1993
- About 760,000 Internet-related jobs were created in 1996 alone

Source: MIT, Cambridge, Mass.; Department of Labor Statistics, Washington; ITAA, Arlington, Va.

Clients said Web-Staff's specialization can reduce the time it takes to get someone on-site who has the exact skills to match a project, which saves money and keeps them from having to pay recruiting fees to multiple search agencies.

"It definitely helped and enabled us to get directly to the point," said Karen Fecenko-Lyon, manager of creative services at GE Capital Corp. in Stamford, Conn.

With general computer staffing firms, "it can be hit or miss hiring Web development people," she added.

The worker GE Capital hired through Web-Staff has been able to manage the company's whole project and bring in other talent from Web-Staff to complete different parts of the effort.

ON TOP OF IT

For the Web developers, the strategy helps them land better jobs and hit the ground running.

"It was refreshing to go there and find people who understand the technical aspects of a Web site," said John Jeblonski, a Web programmer in Boston who uses Web-Staff for job contracts.

He acknowledged that at first he was a little fearful of working with a group tied to a traditional firm such as MacTemps.

That's why Web-Staff makes sure most recruiters, such as Cyndi McCollister, have already had some real-life experience with Internet projects. McCollister, placement director at Web-Staff's San Francisco office, said she has been a Web site project manager and "still spends a lot of time in the classroom" brushing up on Internet skills.

Her familiarity helps her gauge the needs of clients, one of whom wanted to build a Web site but didn't even have an Internet connection.

But some observers warned against using firms such as Web-Staff as a crutch to do planning for Web projects.

"We recommend that before contracting someone to build a Web page, business managers try out the cheap and free tools available on the Internet to at least know what they are talking about," said John Sumser, CEO of the Internet Business Network in Mill Valley, Calif. ☐

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From Desktop to Enterprise

Leaders in I/O Technology

The demand for device driver portability between operating systems and host platforms, combined with increasing requirements for intelligent, distributed I/O processing has led to the development of the Intelligent Input/Output, or I_2O specification. BMC Software and Intel Corp. are working closely with the I_2O Special Interest Group (SIG) to bring I_2O-compliant technologies to market, including integrating PATROL Management solutions with the Intel i960RP I/O processor.

"The importance that the Intel/BMC relationship brings to the market is that BMC innovation in I/O technology naturally makes them a leader in this collective new I/O-centric industry," states Alan Steinberg, Director of New Business Development, Connected P.C. Division at Intel. "Currently we have companies coming in from the desktop and from other areas of the industry that don't necessarily have the Enterprise experience BMC Software has to deal with the type of I/O that is needed in what could be called the new 'open mainframe' world."

Steinberg envisions a world where Microsoft will provide the main operating system, Intel will provide the hardware architecture and BMC Software will contribute the key I_2O-compliant management technology. BMC Software's role will be to help architect what Steinberg calls the "highly available, highly manageable open system mainframe" on the I/O space.

Bob Beauchamp, Vice President of Strategic Marketing and Corporate Development for BMC Software, agrees. "The pervasiveness of the i960 chip in the Windows NT and NetWare environments, combined with BMC Software's PATROL technology, will empower customers with unprecedented management and monitoring capabilities from the application to the motherboard."

Clearly, the ability to gather statistics regarding I/O is a great step forward. The PATROL Application Management Suite completes the picture by correlating I/O statistics with the applications that are utilizing the I_2O components or sub-system. This allows unprecedented optimization capabilities, such as automated load balancing, cache reallocation, and the rerouting of network traffic. All of these capabilities can be performed on demand and are based on the performance requirements of the applications.

Currently, no two vendors come as close as Intel and BMC Software in providing this comprehensive approach to I/O processing and manageability.

"We've moved into a new paradigm where I/O is as important as the central CPU technology," states Steinberg. "This shift will allow BMC to proliferate its management product line in the open systems environment. Pairing Intel I/O technology with PATROL is just the very beginning. It's the first product of many, as this new I/O-centric technology emerges into the marketplace, and we think it's going to be an exciting ride."

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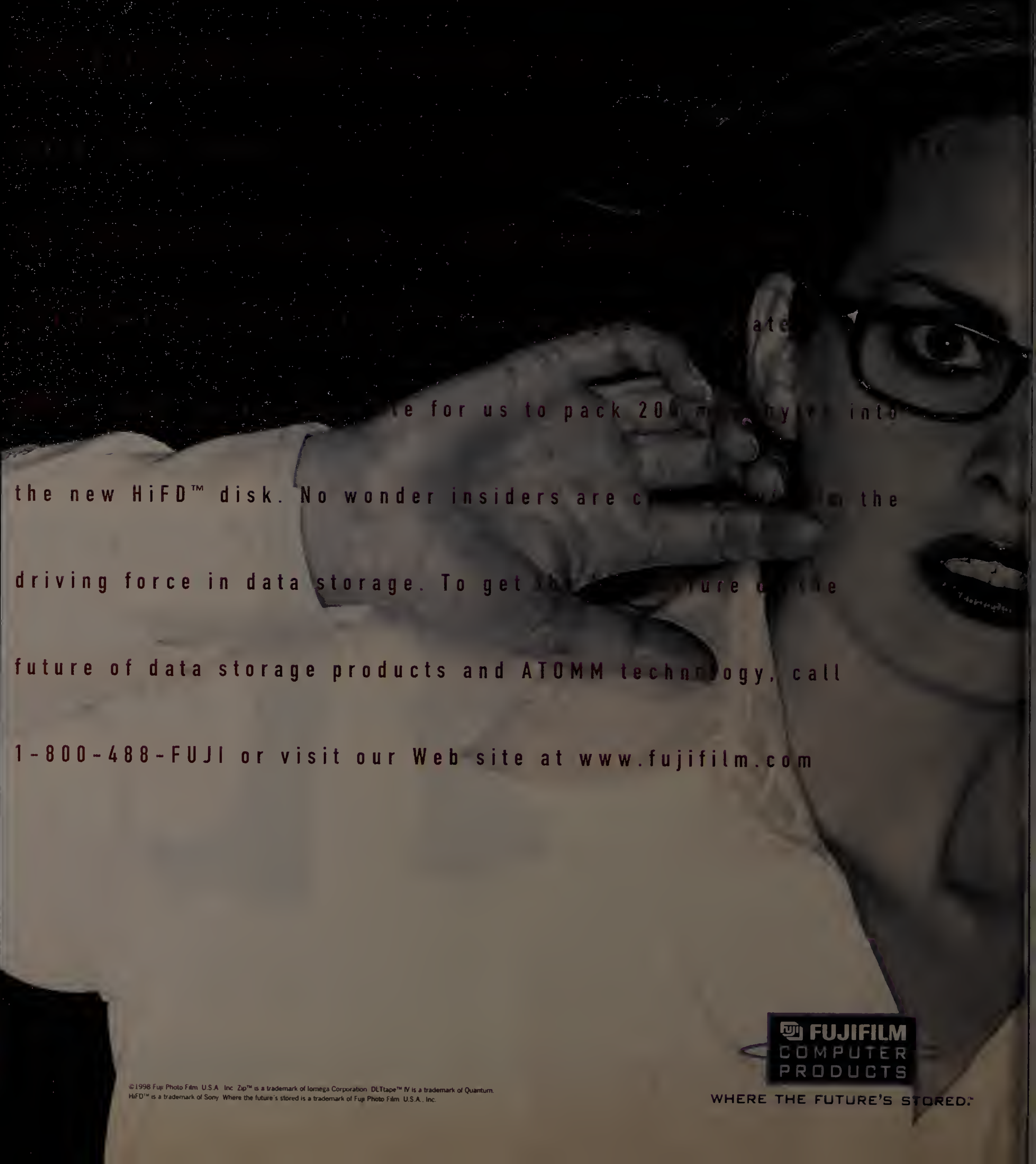

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Briefs

INSIDE JOBS

What are the most likely sources of computer attack?

Disgruntled employees	[illegible]
Independent hackers	72%
U.S. competitors	48%
Foreign corporations	29%
Foreign governments	21%

[illegible] computer security professionals [illegible] allowed

[illegible] San Francisco

NT security monitor

Atlanta-based Internet Security Systems, Inc. is shipping a new version of its RealSecure intrusion detection software that can recognize a wider range of Windows NT hacking techniques.

RealSecure launches scripted responses to intrusions. It scans more ports on the server, gateways and administrative functions in an operating system than the previous version of the product did. A perpetual RealSecure license costs $8,995.

Cylink sells business

Encryption maker Cylink Corp. last week sold its Wireless Communications Division to P-Com, Inc. in Campbell, Calif. A spokesman for Sunnyvale, Calif.-based Cylink said the company is leaving the wireless market to concentrate on expanding its encryption products.

P-Com paid Cylink $46 million in cash and $14.5 million in a note payable 100 days after the sale of the Wireless Communications Division closes on or before March 31.

Novell CFO resigns

James Tolonen, a 15-year veteran of Novell, Inc., recently resigned his post as the company's chief financial officer (CFO). Tolonen is the latest in a long line of Novell executives to leave the Provo, Utah-based company since Eric Schmidt became CEO last April.

Beta testers endorse E-checks

By Laura DiDio

THE FEDERAL GOVERNMENT and a group of Boston banks are testing a way to slash financial transaction costs by creating an electronic version of the simple paper check.

The electronic Secure E-check is created using public/private-key encryption and a smart card. The electronic check can't be changed once it is created, but its authenticity can be traced and verified.

The 18-month test is being funded by the U.S. Department of the Treasury's Financial Management Services division, which oversees all U.S. government payments. Other pilot participants are the Federal Reserve Bank of Boston, BankBoston and NationsBank Corp.

The technology at the heart of the 4-month-old project was designed to safeguard the funds and privacy of all parties involved in a financial transaction, said John Doggett, vice president of BankBoston Capital, who is spearheading the project. BankBoston Capital is the private equity arm of BankBoston,

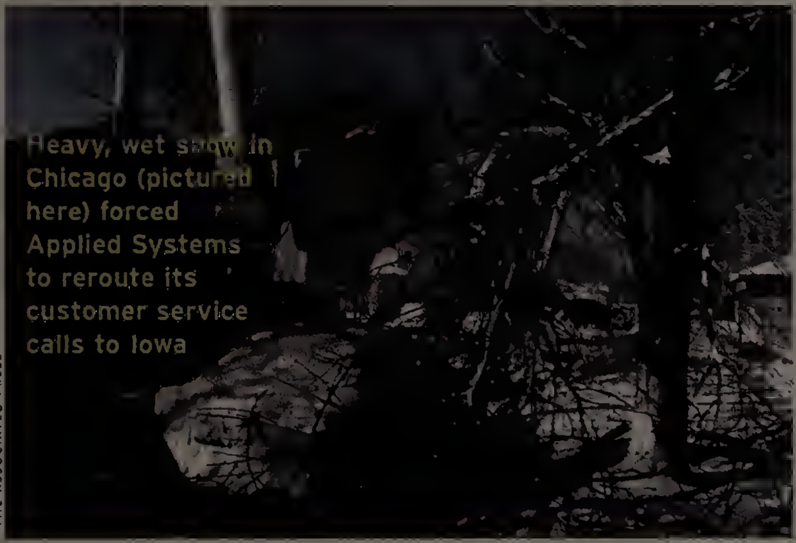
Users sign a Secure E-check with a digital signature on a smart card and encrypt it with a

E-check technology, page 58

The end result of Secure E-check technology is "faster, more efficient and cheaper check processing."
– John Doggett, BankBoston Capital

WEBB CHAPPELL

Neither snow nor ice stops flurry of support calls



Heavy, wet snow in Chicago (pictured here) forced Applied Systems to reroute its customer service calls to Iowa

THE ASSOCIATED PRESS

By Matt Hamblen

AFTER A MILD WINTER, the south suburbs of Chicago got hit hard earlier this month: A foot of heavy, wet snow stranded motorists, took down power lines and left huge areas without electricity.

At Applied Systems, Inc. in University Park, Ill., the lights were out, few of the company's 100 call center agents could make it to work, and the 2,000 support calls the center typically handles each day were starting to roll in.

"It was 8 a.m., and all hell was breaking loose. But we made a couple of changes in our call center software that took two minutes, and we were able to send all the calls to Iowa," said Dave Powell, a senior technical advisor at Applied Systems.

The company operates three call centers in North America and answers computer support questions for 7,000 independent insurance companies worldwide.

The work-around wasn't perfect, Powell said, but it was good enough to keep clients satisfied.

QUICK RESPONSE

Applied Systems easily made the transfers and included a voice message that explained there might be delays reaching the Iowa agents. "At least our customers weren't left in limbo," Powell said.

"We need to be able to respond quickly to justify the fees we charge agents," he said. "If I'm an insurance customer and my roof collapses from a snowstorm and I'm freezing to death, I don't want to get ahold of an insurance agent and find

Support calls, page 60

Customer service catches network vendors' eye

By Bob Wallace

CABLETRON SYSTEMS, INC.'s plan to launch a Web site that will let users get price quotes and systems configurations and track their orders online is the latest evidence that internetworking vendors are using service features to attract customers.

The Rochester, N.H., vendor created the site to bolster its customer support and increase sales to match those of rivals Cisco Systems, Inc. and 3Com Corp.

Those vendors have already established similar sites. Cabletron plans to launch its site next month.

"Electronic-commerce systems benefit users by automating and streamlining what were time-consuming manual processes," said John Morency, a principal at Renaissance Worldwide, Inc., a Newton, Mass.-based consultancy. "They represent an important improvement

Customer service, page 58

PAT DRYDEN

Arizona State's Joe Askins suggests users meet regularly with vendors

NEW PRODUCTS

EXTREME NETWORKS has announced the Summit4 Integrated Server Switch, which supports a mix of 10M, 100M and 1,000M bit/sec. Ethernet ports.

According to the Cupertino, Calif., company, the switch has 16 10/100M bit/sec. ports and six Gigabit Ethernet ports. It was designed as a scalable device. For example, a mix of Macintosh and PC servers can use 10M bit/sec. connections, 200-MHz Pentium servers can have 100M bit/sec. Fast Ethernet connections, and high-end servers can be matched with Gigabit Ethernet connections.

The Summit4 with 10/100Base-TX ports costs $24,995. The switch with 100Base-FX ports costs $29,995.

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MORGAN NETWORK SOFTWARE has announced Private Data Mover software, which transfers files between Unix and Windows NT systems.

According to the Kennesaw, Ga., company, the software enables push and pull transfers between servers and workstations and click-and-drag file management. It was designed to support two to 10,000 TCP/IP network node connections.

Pricing is based on the number of TCP/IP nodes and begins at $495 for Unix, $295 for Windows NT and $59 for Windows 95.

Morgan Network Software
(770) 612-8282
www.morgansw.txt

WEBGEAR, INC. recently announced the Aviator Wireless Network, a Windows 95-based, peer-to-peer wireless LAN system for small businesses.

According to the San Jose, Calif., company, the system lets multiple users share printers and applications, access all attached disk drives, and transfer data and programs at speeds up to 500K bit/sec. and distances up to 75 feet.

Pricing starts at $299 for a two-user system.

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Beta testers endorse E-check technology

CONTINUED FROM PAGE 57

private key stored on the card. Banks use the key and signature to authenticate the check.

The process includes one feature that is absent from other encryption methods popular in electronic commerce: a removable smart card that users can keep with them.

"No sensitive information resides on the hard drive, so would-be hackers come up empty-handed," said Susan Landry, a senior product manager of emerging payment technology at BankBoston. The electronic checks follow the same procedures and regulatory rules that govern paper checks.

POTENTIAL COST SAVINGS

The security technology makes authentication simple enough for the banks to adopt it quickly, Landry said. The only technology they need to add is an application called an electronic-check server that can run on existing Unix hardware.

Booz, Allen & Hamilton, Inc., a consultancy in Tyson's Corner, Va., recently conducted a study of electronic-banking delivery costs. The poll revealed that World Wide Web-based banking transactions can cost as little as a penny per transaction. In contrast, traditional teller-based transactions cost about $1.07 each, and electronic data interchange costs 20 cents to 50 cents per transaction.

The Secure E-check technology complements other electronic-commerce initiatives such as the Secure Electronic Transaction protocol and Visa International, Inc.'s and MasterCard International, Inc.'s electronic-cash project.

Electronic checks let users pay in situations when no real electronic payment structure exists, such as payments between individuals, Landry said.

For the duration of the pilot project, the Secure E-check will be the payment method for 50 U.S. Department of Defense contractors that previously paid their bills with traditional paper checks (see related story above).

"The government spends 50 cents on each of the 600 million paper checks it writes annually. We think the [Secure E-check] technology can cut that to a penny per check," said Mike Versace, lead payments analyst at the Federal Reserve Bank of Boston.

The testing so far has gone well, he said. The electronic checks have worked well with the systems of all participating banks, and testers haven't been able to compromise their security, Versace said.

Such confidence from government agencies makes potential users such as Thad Hymel, chief technologist at Hibernia National Bank, Inc. in New Orleans, eager to try electronic checks.

"Thanks to scanners and color printers, anyone can go to their local Home Depot, buy some check paper and make a phony check that's indistinguishable from the real thing," he said. □

Feds' E-deadline looms

There is a good reason the government is pushing development of the Secure E-check pilot: Federal agencies must comply with the 1996 Debt Collection Act, which mandates that all federal payments be made electronically by January 1999. Secure E-check technology is expected to save the government as much as $500 million over the next five years, a Treasury Department spokesman said. Right now, about half of all federal payments are made electronically.

As part of the testing, the Defense Finance and Accounting Services Department will work with the Treasury Department to pay about 50 U.S. Department of Defense subcontractors using the Secure E-checks, said Susan Landry, senior product manager of emerging payment technology at BankBoston.

The Treasury Department creates electronic checks to make payments, digitally signs them and sends them to vendors via electronic mail. The Defense Department's vendors then use the remittance information to update accounts-receivable records.

The vendors digitally endorse the checks and E-mail them, along with an electronic deposit slip, to a participating commercial bank. Once they are received by the bank, check and endorsement signatures are automatically verified. The deposit is then credited to the customer's account. The checks clear through an electronic-cash letter presented to the Federal Reserve Bank.

— Laura DiDio

Customer service catches vendors' eye

CONTINUED FROM PAGE 57

in customer service."

Users are happy to get the extra help, but they aren't generally unhappy with the service and support they receive from LAN vendors.

"The hardware vendors have really cleaned up their act by having their products operate as advertised," said Steve Lopez, a network manager at The National Board of Medical Examiners in Philadelphia. Previously, new products often shipped with physical defects that the user would have to fix or would have to call on a support technician to fix. That's rare now, Lopez said. "Any problems are minor and can usually be fixed with a simple software download," he said.

Lopez had no complaints about his LAN vendors, but other users said the best way to stay happy is to stay on top of your vendors.

There are two ways to deal with suppliers regarding customer service, said Joe Askins, director of data communications at Arizona State University in Tempe. "Users can either beat on their vendors or develop partnerships with them on the customer service front — whichever works best."

Askins said the university chose to build a close relationship with its vendors, meeting with them biweekly to review items on the university's "issues list." That list includes equipment problems and ongoing project issues.

"You really have to hold vendors' feet to the fire and require regular meetings," Askins said. "It results in much better customer service and support. We're really quite pleased with the results."

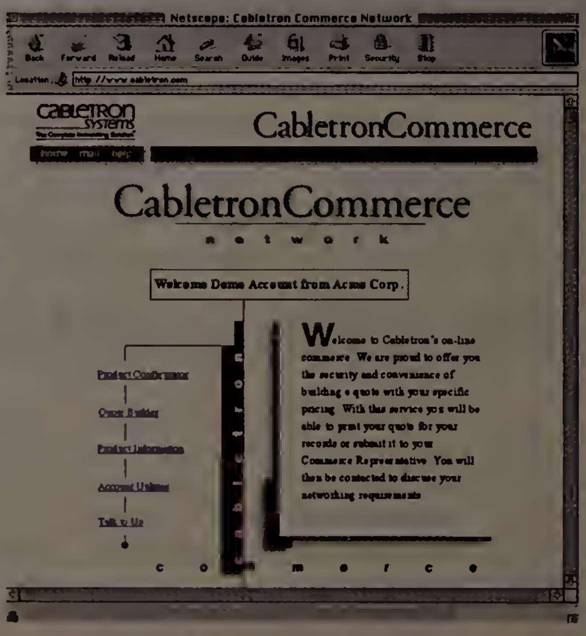
Robert McKenna, vice president of global network engineering at Sumitomo Bank Capital Markets, Inc. in New York, said he prefers to work with cross-trained customer service agents.

"Breadth of product knowledge is important, since companies run networks comprising multiple products that interoperate," he said. "Customer service agents need to know how products work together to better handle users' problems."

Vendors also could stand to assure that agents have more depth of knowledge, McKenna said. "It'd sure be great to get access to real gurus. Customer service varies," he said.

Support from networking vendors is a mixed bag, according to Bill Horst, network manager at the U.S. General Services Administration in Boston.

"Some vendors are very good at customer satisfaction, especially in acting as a voice for customers and their requirements," Horst said. "Others are too product-focused and bottom-line driven. That leaves customers to fend for themselves or, in the case of abandoned products, without a migration plan." □



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Snowed-in company reroutes support calls

CONTINUED FROM PAGE 57

out he's having computer problems. When it comes time to renew my premium, I'll find another agent."

Applied Systems shunted the calls using WhiteCap, computer telephony software from Edgewater Technology, Inc. in Wakefield, Mass. Applied Systems had just installed the product in October. Before then, the company used a homegrown voice-response system that took a message when all the agents were busy. That forced customers to wait for callbacks.

Analysts said WhiteCap provides for the first time sophisticated call center technology that midsize and small businesses can afford. Major call centers might pay $250,000 for a higher-end product, but WhiteCap costs only $5,000 per server and $200 per client.

Applied Systems stuck with its old system because it hadn't found a new one at a price it wanted to pay, Powell said.

The software includes an Automatic Call Distributor, Interactive Voice Response and computer telephony to route calls to agents. It tells customers how long they will have to wait. Ultimately, it will let customers who are visiting a World Wide Web site ask an agent to call them.

The changeover has "absolutely" improved response, said Dawn Cornwell, computer network manager at The Insurance Center in Augusta, Ga., one of the independent agencies that calls the center regularly for support.

"Previously, we'd make a call and wait 24 hours to two days. Now the system announces the number of callers on hold, and usually you wait only three to five minutes," Cornwell said.

There are dozens of call center companies that do about the same thing as WhiteCap, said Joe Outlaw, an analyst at Gartner-Datapro in Delran, N.J.

The largest companies in the field are Aspect Telecommunications, Inc. in San Jose, Calif.; Nortel, Inc. in Richardson, Texas; and Lucent Technologies, Inc. in Murray Hill, N.J. □

April 6

Surviving a Global Rollout

Global Innovators

What's one way to make a multinational company more cohesive, cost-efficient and strategic? For many global firms, the answer is standardized worldwide software. But when it comes to rolling out a standard human resources, financial or enterprise resource planning application around the globe, only some are willing to talk about the glitches experienced along the way.

Our March 30 Global Innovators will highlight companies that are enduring global rollouts — and living to tell about it.

Additional copies may be obtained through Michelle Olk, Reprint Services, (800) 217-7874

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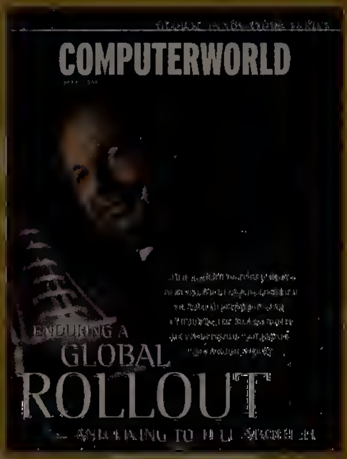

NEW PRODUCTS

FLOWWISE NETWORKS, INC. has announced the IMS 1600, a hardware-based Layer 3 switch that includes automatic configuration software called AutoRoute.

According to the San Jose, Calif.-based company, the routing switch comes with 16 Fast Ethernet ports (full-duplex or half-duplex operation) and supports concurrent wire-speed switching and routing on every port. It was designed to ease workgroup congestion by off-loading IP traffic routing from existing software-based backbone routers.

It costs $450 per port.

FlowWise Networks
(408) 474-0385

LANNET LTD. has announced Visage 1600 and Visage 2500 Ethernet switches that feature active congestion management on every port.

According to the Los Gatos, Calif., company, Visage 1600 provides 16 ports of switched autosensing 10/100 Ethernet. It was designed for server farms, midsize backbones and power users. Visage 2500, a group switching product, has 26 100M bit/sec. ports that are divided into three groups of eight, with each group configured to be 10M or 100M bit/sec.

Visage 1600 costs $3,495. Visage 2500 costs $2,495.

Lannet
(408) 871-4000
www.lannet.com

Software

Databases • Development • Operating Systems

Briefs

Meta-data tool

Information Advantage, Inc. in Eden Prairie, Minn., last week released an upgrade of its DecisionSuite relational data analysis server with expanded administration tools. DecisionSuite 5.7 adds a visual interface and color-coded error alerts for managing informational meta data. It also has built-in links to Logic Works, Inc.'s Erwin data modeling software. Other features include usage and performance monitoring. DecisionSuite pricing starts at $39,995 for 20 users.

Desktop data analysis

Lawson Software in Minneapolis plans in June to ship the first three versions of a desktop data analysis product tied to its packaged applications and designed for specific business users. The first members of the browser-based Lawson Insight PI line were designed for CEOs, chief financial officers and chief operating officers.

PC security

Bakson Corp. in Huntington Beach, Calif., has introduced PC Patrol, a 32-bit software package that lets users dial in to a PC and view video captures of events such as a log of system events. The PC Patrol package is available now and costs $395.

WHAT DO WE GET?

Top goals of companies with data warehouses:

Better access to current data	80%
Better information for analysis	76%
Integration of data from different systems	72%
Better access to historical data	67%
More consistent data	64%

Base: 50 companies, most with more than $1 billion in annual revenue; multiple responses allowed

Source: The Conference Board, New York; Price Waterhouse LLP, New York

Dynamic HTML not applet-ready

▸ *Critics question strategy for Microsoft's J++*

By Sharon Gaudin

MICROSOFT CORP. IS pushing dynamic HTML as a cross-platform replacement for Java, but some users and industry observers said the markup language is out of its league.

The latest version of Microsoft's Visual J++ application development tool cuts out Java's cross-platform capabilities and ties the Java applications written with it to the Windows platform [CW, March 16]. But that Windows anchor doesn't mean it isn't a platform-independent tool, company officials said.

Microsoft designed Visual J++ Version 6.0 so that the Java applications built with it can generate dynamic Hypertext Markup Language (HTML). And the dynamic HTML can shoot across the Internet through a World Wide Web browser to share information, even if the Java code is anchored to Windows, Microsoft officials said.

But critics of Microsoft's approach said that although dynamic HTML can send information such as a document, it can't transfer over the Internet an applet carrying a business function such as an analysis tool or word processor.

"I don't think anyone can see [dynamic] HTML as a full-featured programming language,"

Dynamic HTML, page 62

COMPARING THE LANGUAGES

HTML
Very basic coding that describes how text should look in a browser

Dynamic HTML
Souped-up HTML with added capabilities such as animation and list boxes

Java
"Immature" language that can be downloaded and can perform complex analysis and business intelligence

Wal-Mart's help desk helps itself

By Kim Girard

AT WAL-MART STORES, INC., the heat is on the help desk.

About 100 workers on the company's main internal help desk juggle trouble tickets daily, trying to prevent everything from Windows NT crashes to mainframe meltdowns.

"If the systems slow down a bit, our customers are screaming bloody murder," said Tom Morrow, manager of distributed systems management at Bentonville, Ark.-based Wal-Mart.

To improve systems performance, the retailer is spending more to increase automation at its main help desk, looking to the World Wide Web, seeking to raise its service levels and using software from Remedy Corp. in Mountain View, Calif.

The company's help desks, including the main support center in Bentonville, respond to users at more than 3,000 Wal-Mart stores, Sam's Clubs and distribution centers worldwide.

Wal-Mart's increased help desk spending fits a broader trend. Of more than 100 large corporations surveyed by Computer Economics, Inc., a Carlsbad, Calif., consultancy, 73% said they spent more on help desks last year because there are more users in client/server environments using more network applications.

Help desk, page 62

Service-level agreements assist the help desk by:

- Improving employee satisfaction through managed service
- Giving staff better use of IT resources
- Defining expectations better
- Enabling measured results
- Helping IT departments justify spending

Caching to speed up SAP apps

By Randy Weston

SAP AG IS FEELING the need for speed.

The maker of the popular R/3 business process automation system is embedding memory-enhancing technology in some of its major software packages, such as R/3 and new advanced planning and supply-chain management applications. The technology was designed to speed up some transactions, hastening calculations

Caching, page 62

Wall Data's tool falls short

By David Strom

SO MANY PEOPLE are trying to sell you ways to marry your database to your Web servers, it is getting hard to tell the products apart. Cyberprise, Wall Data, Inc.'s entry into this arena, unfortunately isn't one of the better efforts. It has unstable and undocumented methods that make it difficult to implement.

Corporate database developers should look at a more mature tool, such as Cold Fusion from Allaire Corp., or a tool that is easier to set up, such as WebFiler from Softquad International, Inc. Cyberprise isn't as easy to use or as capable as those two products.

To set up Cyberprise, you need Version 3.0 or better of Microsoft Corp.'s Internet Information Server (IIS) World Wide Web server. You also need the latest Open Database Connectivity (ODBC) drivers if you want to be able to communicate with an ODBC database. Cyberprise won't run on anything other than IIS because it creates a series of active server pages to display your database.

CREATIVE LINKING

Wall has taken an interesting approach to linking browsers to back-end databases. Cyberprise separates the people who need to design the database and Web forms from those who

Wall Data, page 64

PRODUCT REVIEW

▸ *Cyberprise DBApp Developer Version 1.0; DBApp Publisher*

OVERALL C- GRADE

WALL DATA, INC.
Kirkland, Wash.
(425) 814-9255
www.cyberprise.com

Price: DBApp Developer, $2,500; DBApp Publisher, $200 per concurrent user

Pro: Quick way to publish existing databases on a Web server

Con: Runs only with Microsoft's Web server; making changes to data structure is excruciating

Dynamic HTML not applet-ready

CONTINUED FROM PAGE 61

said Bob Mason, senior software architect at Art Technology Group, Inc., a Boston-based multimedia development company. "No one would say it has the complexity and richness a real programming language would provide. I imagine it would be a nightmare."

Dynamic HTML is a souped-up version of HTML, a basic markup language that describes what a screen should look like but lacks the computing power to do calculations or analysis. Dynamic HTML has added capabilities such as support for animation, but it still lacks computing power.

Java is an object-oriented programming language designed to be lightweight so that applications written in it can travel across a network. Java is building up class libraries and a broader list of application development capabilities such as drag-and-drop.

Jeff Kinz, a research manager at International Data Corp. in Framingham, Mass., said he doesn't see how Microsoft will substitute dynamic HTML for Java, and users are going to be sadly surprised when they try.

"They're trying to get the world to believe they can replace Java with a simple markup language. They won't be doing that," Kinz said. Dynamic HTML also "can't run on the server side because it's built to be a way of presenting things on the client screen," he said.

The dynamic HTML code that runs across the Internet may not even run on Netscape Communications Corp.'s Navigator browser, according to a Netscape spokesman. Navigator Versions 2.0 and 3.0 don't support dynamic HTML, and a Netscape spokesman said the company isn't sure if Version 4.0 will run it either. The company needs to analyze Visual J++ to figure out whether Navigator will support dynamic HTML.

And some Web site developers are concerned that switching to Visual J++ would turn off their sites to Navigator browsers.

"My business is all about audience size," said Mark Benerofe, head of Internet administration at Sony Online Ventures, Inc. in New York. "Whether it's about advertising revenue or [electronic]-business revenue, the big number at the top of everyone's spreadsheets is audience reach. I can't write off a big percentage of my audience." □

Wal Mart's help desk

CONTINUED FROM PAGE 61

Bill Keyworth, an analyst at Gartner Group, Inc. in Stamford, Conn., said it typically costs three times more to support a client/server environment than a mainframe environment.

"People will outsource to try to cut costs, but it doesn't happen," Keyworth said. Instead, companies such as Wal-Mart are becoming more proactive than reactive, investing more in new systems that stress systems automation as a way to save in the long term.

Overall, he said, companies are backing away from an isolated help desk that is based on trouble tickets. They are instead emphasizing an integrated system that tracks workflow throughout information systems, including asset management, service requests and trouble tickets. They are also looking at applications that detect patterns on the help desk to enable managers to change staff and support on the fly.

At Wal-Mart, the help desk is now tied to the discount retailer's Tivoli Systems, Inc. network management environment. Wal-Mart also has worked to integrate its help desk with help desks at its hardware and software vendors, including IBM, Hewlett-Packard Co. and NCR Corp.

TICKET OUT OF TROUBLE

Now, Tivoli systems agents on the network scan for network problems, automatically generating a help desk trouble ticket when a problem is detected. For example, if a system doesn't back up as scheduled, a ticket is automatically shipped to the help desk.

"It eliminates a phone call to my help desk if I fix something before it breaks," Morrow said. He said Wal-Mart, on average, has shaved 10 minutes off every downtime incident through automation.

The challenge is to control help desk costs while shortening response times — now between four and five minutes — to keep users happy.

Wal-Mart, which is seen by analysts as an innovator in help desk systems, plans to install Remedy's client on users' Web browsers to eliminate the need to install new software on every desktop.

The retailer also is looking at Remedy's new service-level agreement application to improve help desk performance. The company currently uses a homegrown application for measuring help desk data.

"If you can't measure it, you can't manage it," Morrow said. □

Caching to speed up SAP apps

CONTINUED FROM PAGE 61

and analysis response times.

LiveCache is a caching system that eliminates bottlenecks that occur when transferring data between disk and memory. LiveCache, to be available by year's end, supports several gigabytes of RAM. It is expected to work with 64-bit processors and high-memory 32-bit hardware models.

SAP is applying a familiar technology to its products, analysts said.

"Conceptually, it's pretty similar to what you see in a browser or in a printer spooler," said Joshua Greenbaum, an analyst at Hurwitz Group, Inc. in Framingham, Mass. "It transfers complex and calculation-intensive stuff into a giant memory cache and reduces the time it takes to hit the database."

Greenbaum said the caching system is extremely important for SAP's new supply-chain management software system, which includes an R/3-specific data warehouse, sales force automation and advanced planning and optimization tools.

LiveCache can store in memory data collected from multiple sources in a supply chain. That means, for example, that a salesperson can calculate product availability and get an answer for a customer faster.

For Brother International, Inc., a Memphis-based maker of typewriters and other office equipment, the ability to quickly access information on its products is a must.

"We do real-time stuff here," said Sam Cox, MIS manager at Brother, an R/3 shop. "We have over 8,000 active parts numbers, and we bring in parts from various locations around the world." Cox added that planners and salespeople need to access that information instantly and that a caching system is a good way to make that possible.

Bay Networks, Inc. is beta-testing SAP's new data warehouse application, called Business Information Warehouse. Ari Bose, director of architecture and technology at the internetworking company, said Bay wants to gather data in the application from its R/3 system and suppliers to make forecasts. □

NEW PRODUCTS

SEAGATE SOFTWARE has announced Seagate Client Exec, software that can back up user workstations to a Windows NT 4.0 server.

According to the Scotts Valley, Calif., company, the client software integrates with Microsoft Corp.'s Windows Explorer to create a folder called Client Exec Catalog that displays a list of protected files. Users click on protected files to restore them on their workstations. Systems administrators control who gets data backed up, what gets backed up and backup schedules.

The tool costs $695 per server, with unlimited workstation support.

Seagate Software
(408) 438-6550
www.smg.seagatesoftware.com

VMARK SOFTWARE, INC. has announced DataStage Release 3.0, a data extraction and transformation tool used to develop data marts and large data warehouses.

Officials at the Westboro, Mass., company said the software includes a job design debugger that lets developers monitor the data transformation process to ensure that a job runs as designed. A Data Browser lets users preview sample data from a data source or target during development or at run time. A Mainframe Data Access module, which simplifies data extraction from legacy mainframe systems, is sold separately.

DataStage Release 3.0 costs $39,500 for the server package and $7,900 for the designer package.

VMark Software
(508) 366-3888
www.vmark.com

IMPEL SOFTWARE, INC. has announced Impel Documents 1.0, push technology software for content distribution using electronic mail.

According to the Kensington, Md., company, the software allows existing E-mail systems to transport content, programs and commands that open immediately upon reception. The product is aimed at corporate managers and marketers. It requires Microsoft Corp.'s Exchange Client, Windows Messaging, Outlook 97 or Eudora 3.0 from Qualcomm, Inc. and runs under Windows 95 or Windows NT.

The software costs $149.

Impel Software
(540) 786-9881
www.impelsoftware.com

I/G OPENWARE, INC. has announced Direct-To-1 Version 4.0 for Lotus Notes, software that eases Messaging Application Programming Interface (MAPI)-compliant electronic-mail migration to Notes.

Officials at the West Chester, Pa., company said the software converts to Notes format all of the E-mail addresses, folders, attachments and message flags found in MAPI-compliant E-mail programs such as Microsoft Corp.'s Exchange or Novell, Inc.'s GroupWise.

Pricing starts between $35 and $46 per user.

I/G OpenWare
(610) 241-6000
www.iga.com

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EXCITING DEVELOPMENT

Wall's Web database tool falls short

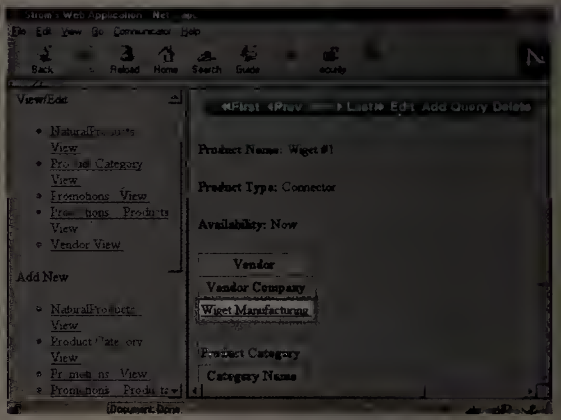
CONTINUED FROM PAGE 61

will fill them with information. The former are developers; the latter are users. But the company decided to couch this relatively simple relationship behind a series of million-dollar words, such as semantic object modeling and database-powered intranets. That is a pity because Wall has the kernel of a good idea, but it is poorly implemented. For example, the default templates use frames in an odd fashion.

The problem is that developing an appealing Web form that can display a database properly isn't so easy. What if your query returns hundreds of records? What if your database has zillions of fields? What if you don't know anything about Hypertext Markup Language forms and tags? Unfortunately, Cyberprise doesn't help with any of those things.

The software is confusing mainly because the steps to follow in going from database to the Web aren't obvious. I would have liked the documentation to have included more examples and demonstrations of how to extract information from my existing databases. For instance, "To get started, you drag this here, run this wizard here and answer these simple questions."

Even after going through the reviewer's guide, I still had to call the company to get enough guidance to create a simple application and publish my database on the Web.



Product Name: Wiget #1

Product Type: Connector

Availability: Now

Vendor

Vendor Company

Wiget Manufacturing

Product Category

Category Name

Wall Data's Cyberprise has the kernel of a good idea but a confusing implementation

The trouble comes when you want to do something more complicated. It is a real chore to change the templates to create the Web forms. You have to edit those by hand, and they aren't a pretty sight.

And that isn't the only ugly thing about the product. There's no clear documentation to show you how to change your database structure.

TEST PARAMETERS

I tested the software on Windows NT 4.0 running IIS 4.0 and ODBC 3.5. I had lots of RAM in this machine, although it didn't seem to matter for the simple dBase/Access-type databases I was using. Wall recommends 24M bytes as a minimum. But if you are running DBApp Developer with SQL Server and IIS, you probably want at least 96M bytes.

And testing is a problem. After many cycles in which I made a change, posted it, then checked it with a Web browser, IIS stopped showing the changes and wouldn't drop a connection. I had to shorten the connection time-out variable to about 100 seconds to make it show the latest version.

Cyberprise isn't cheap. The developer version costs $2,500 for a runtime with a 10-concurrent-user license. If you want more than 10 users at a time, you will have to pony up $200 per concurrent user for the publisher version. For that money, you can get a long way toward Cold Fusion or Web Filer — and for a lot less hassle. ☐

Strom is a reviewer in Port Washington, N.Y. He can be reached at david@strom.com.

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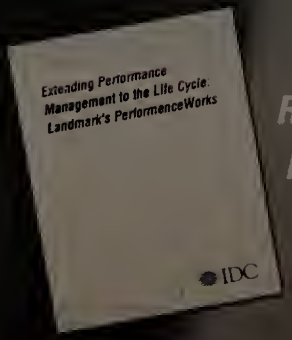

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Servers & PCs

Large Systems ♦ Workstations ♦ Portable Computing

Briefs

AT HOME WITH PC

PC penetration in U.S. homes increased 5% from January 1997 to January 1998. And currently 45% of U.S. households claim to have PCs.

Source: Computer Intelligence, La Jolla, Calif.

Calendar for Win CE

Meeting Maker, calendaring and group scheduling software from Cambridge, Mass.-based On Technology Corp., now supports Microsoft Corp.'s Windows CE 2.0 for two-way synchronization between desktops and handheld PCs. Meeting Maker costs $95 per user.

Network computer

A group of computer and telecommunications companies last week released a specification for developers building mobile, Java-based network computers that connect to the Internet or corporate networks. The first release of the Mobile Network Computer Reference Specification is available for public comment and review at *www.mncrs.org*. The spec will be presented at the Java One Developers Conference this week in San Francisco.

Thin clients rising

The worldwide thin-client market grew 34.7% last year, largely because vendors are increasing access to Windows applications and because of the availability of Java- and browser-capable thin clients, according to Zona Research, Inc. in Redwood City, Calif. Zona said factory revenue was $350.1 million, with 347,917 units shipped last year. Independent Computing Architecture-capable thin clients, which give non-Windows clients access to Windows NT servers, accounted for 48.4% of all thin-client shipments last year, according to the recently released study. Browser-enabled thin clients totaled 26.2% of the market.

Information blitz

▸ *Football scouts, coaches use handhelds to tackle business tasks*

By Thomas Hoffman
HEMPSTEAD, N.Y

ALLSPORT

THOMAS HOFFMAN

Former N. Y. Giants linebacker Carl Banks (number 58 in photo, right), now director of player development for the N. Y. Jets, is trying to convince Jets coaches and scouts that palmtop computers can give them a competitive advantage in recruiting and other business tasks

WHEN HE WAS a Pro Bowl linebacker for the N.Y. Giants (1984-1992), Carl Banks was constantly on the move, blitzing quarterbacks one minute and back-pedaling into pass coverage the next.

Banks is still on the go, but now it is as director of player development for the N.Y. Jets. He is also one of the more unlikely technology evangelists you'll ever meet.

TAKING ADVANTAGE

The soft-spoken 35-year-old has been an avid user of personal digital assistants (PDA) for the past year. After recognizing the device's potential for scouting and other purposes, Banks is trying to convince other Jets coaches and scouts that PDAs can give them a leg up in free-agent recruiting and other aspects of the business.

"We're in the information business, and it's essential that we use technology to maintain a competitive advantage," said Banks during a recent interview from the Jets' practice facility here at Hofstra University.

Banks is far from being a technology newbie. Before he joined the team's front office last March, Banks programmed a multimedia playbook for the Jets to illustrate play designs as in a video game. He used tools from Oracle Corp. and San Francisco-based Macromedia, Inc.

Banks said his Compaq Computer Corp. C120 Windows CE-based handheld has helped him

Jets, page 69

Handheld databases hard to grasp

By Craig Stedman

MOBILE WORKERS soon will be able to hold an entire database in their hands. But it remains to be seen whether business users are ready to shuck their laptops for lighter but less functional handheld computers.

Several vendors, including Oracle Corp. and Sybase, Inc., are prepping Windows CE versions of their small-footprint mobile databases.

That will make the relational software available on handheld and palmtop devices that run Microsoft Corp.'s scaled-down operating system.

Oracle and Sybase also plan to embrace rival handheld products, such as 3Com Corp.'s PalmPilot and Psion PLC's namesake devices.

Targeted users include untethered salespeople and field service workers who have to pull data from and update corporate databases.

But the range of applications mobile users need to run still screams out for more than an easy-to-carry handheld device, several information technology managers said.

"We want people to be able to plug in and do all the normal user things, and palmtops don't really fit well with that kind of requirement," said Mike Lindley, a database analyst at Union Gas Ltd. in Chatham, Ontario.

Union Gas, which sells natur-

Handheld, page 69

PORTABLE DATA

The following lightweight databases are being ported to Windows CE:

Database	Memory footprint	Shipment
Oracle Lite (Oracle)	500K to 750K bytes	Beta tests in early April; shipment in June
Adaptive Server Anywhere (Sybase)	500K bytes to 1M byte	Beta tests in Q2; shipment this year
Raima Database Manager ++ (Raima)	130K bytes	Beta tests this month; shipment in Q2

HOST DATA

Web tools access the mainframe

By Jaikumar Vijayan

A SERIES OF new products is offering users sophisticated ways, via the World Wide Web, to access, manage and integrate data locked up in mainframes and proprietary boxes.

During the past few weeks, vendors such as Attachmate Corp. in Bellevue, Wash.; Platinum Technology, Inc. in Oakbrook Terrace, Ill.; Wall Data, Inc. in Kirkland, Wash.; and Computer Network Technology (CNT) in Minneapolis have announced products that address key security and manageability

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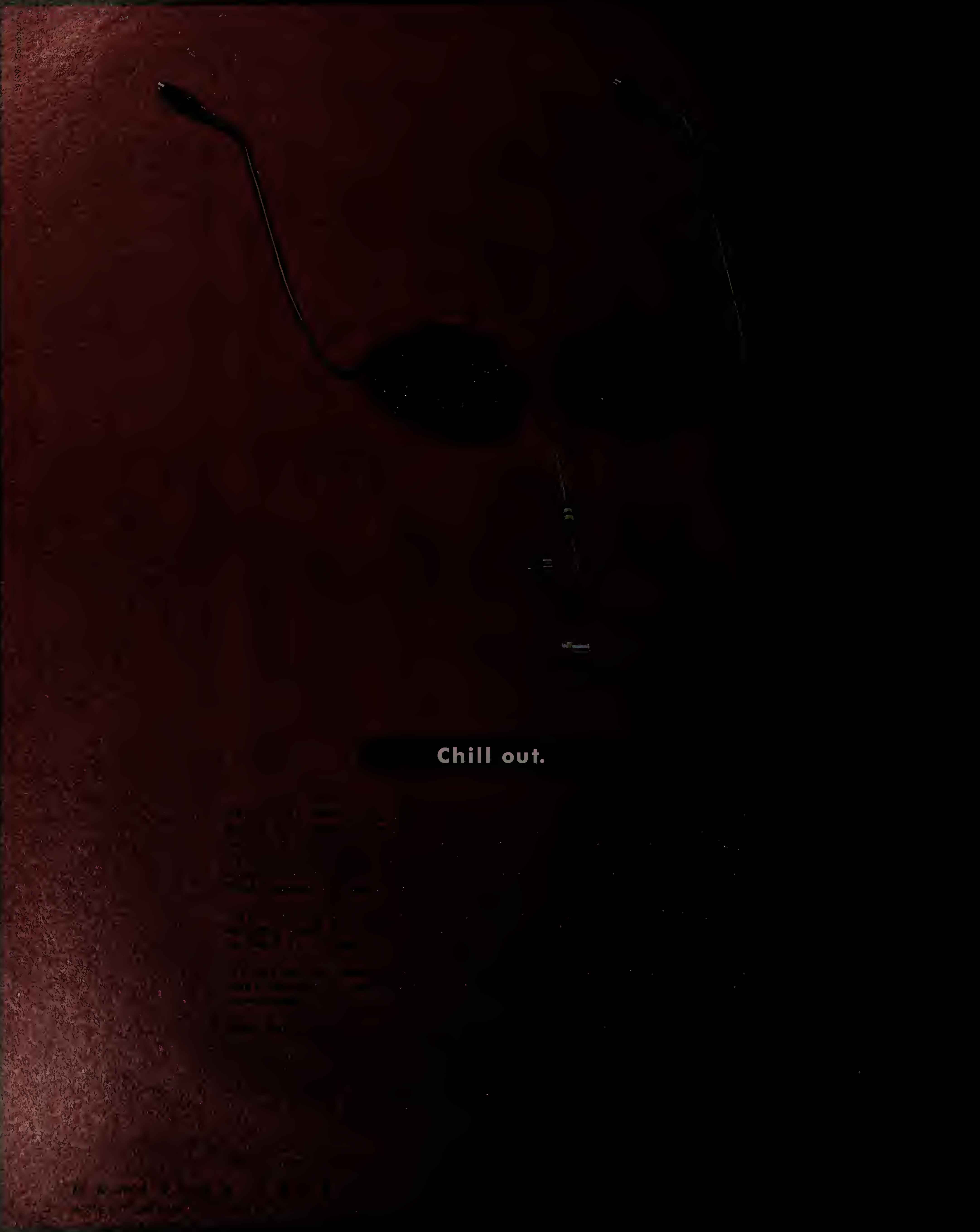
Chill out.

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Jet hands off handhelds

CONTINUED FROM PAGE 67

scout out players and perform his other duties more effectively than he could by "dragging around a 7-pound laptop."

For example, Banks' first assignment when he joined the team last year was to find a set of mutual funds that met all the players' financial needs. Banks said corresponding via electronic mail on his PDA cut the time it took to identify and select an investment vehicle from a projected 6 months to less than 3 months.

The average length of a National Football League player's career is three to four years. Many young players entering the NFL don't have the financial acumen or maturity to manage hundreds of thousands or even millions of dollars being thrown at them, Banks said.

Banks wound up working with former Giants teammate George Martin, now a marketing executive at Mutual of New York (MONY), a New York-based investment company. The two created an investment vehicle for Jets players. Banks used his Compaq PDA to communicate the team's fund strategy to Martin, other MONY executives in Syracuse and Atlanta, and Jets players and management via an ARDIS wireless network.

Now Banks is trying to convince Jets coaches and scouts to use wireless systems to streamline free-agent scouting and contract negotiations. Banks said the scouts are slated to use PDAs when summer camp opens in July.

Scouts in other sports believe they are on the cusp of a digital revolution.

For example, the Seattle Mariners baseball team is about to upgrade its 25 scouts from a 4M-byte Hewlett-Packard Co. 320 LX palmtop computer to a 15M-byte version so they will have enough storage to carry scouting reports about players and refer to that information during games, said Benny Looper, the national scouting supervisor for the Mariners. "It would have been useful for me to have had that information [accessible via] palmtop this winter in the Latin leagues," said Looper, who has been an avid palmtop user for almost a year.

The use of wireless technologies in athletic arenas isn't widespread "and I'm surprised, given the amount of money that's spent in professional sports," said Ken Dulaney, an analyst at Gartner Group, Inc. in San Jose, Calif.

Banks hopes the resurgent Jets, who rebounded from a 1-15 record in 1996 to 9-7 last year, are the first to make their mark in the NFL. "Our head coach [Bill Parcells] is not known" for his technological sophistication, Banks said, "but even he is recognizing what these systems can do for our organization." □

Web tools link mainframe

CONTINUED FROM PAGE 67

issues with Web-based host access.

Among the announcements are the following:

- Attachmate's HostView Server 2.0 integrates Aventail Corp.'s virtual private network security engine to provide features such as user authentication and encryption. A console-based management feature lets administrators manage all client/server-based host access software on the corporate network.
- CNT's Application Reengineering Environment suite allows for Web-based host access and management. It gives users the development tools needed to build Web applications using existing legacy data.
- Platinum's recently released InfoSession lets users on the client side submit updates to mainframe applications, a feature that not many tools provide currently.

WEB-TO-HOST PRODUCTS

Vendor	Product	Capabilities
Attachmate	HostView Server 2.0	Integrates host access management and VPN support
Computer Network Technology	CARE	Web-to-host gateway product, Java-based terminal emulation development tools for deploying E-commerce applications
Platinum	InfoSession data server-side processing.	Uses SQL code to access mainframe technology

NOW'S THE TIME

Such products come at a time when demand for legacy-to-Web access is increasing substantially.

Framingham, Mass.-based research firm International Data Corp. estimates that the market for such tools will grow from approximately $22.8 million last year to $1 billion by 2002.

One example is Allina Health System in Minneapolis. The company owns 15 hospitals and eight clinics. It uses CNT's Web-to-host tools to integrate multiple Unix systems acquired in series of mergers and acquisitions during the past few years.

In one project, for example, the company is using CNT's tools to give users one thin-client interface to two Unix systems.

Users who input data just once via the thin client will simultaneously update a hospital system and a physicians' office system.

"Before, we were duplicating a lot of the work" by separately entering data into each of the boxes, said Stan Hunecke, applications architecture manager at Allina.

The University of South Florida in Tampa Bay, Fla., is using InfoSession to build Web-based interfaces to a mainframe-based course registration system and a purchasing system.

"We were able to build a prototype Web front-end for the student information system in just two days," said Jeb Holub, a technology assessment specialist at the university. □

Handheld

CONTINUED FROM PAGE 67

al gas to 750,000 customers in southwestern Ontario, plans to use the Oracle Lite database in a mobile application for workers who inspect its gas mains. But the company will run the Oracle software on laptops, Lindley said.

Arm Financial Group, Inc. in Louisville, Ky., is taking the same approach. The financial services company is considering Sybase's Adaptive Server Anywhere database for a laptop-based sales force automation project due to be rolled out to about 40 users this year.

Scott Herbener, director of applied research at Arm Financial, uses a Palm Pilot for "very basic stuff" such as storing telephone numbers and scheduling meetings. "But unfortunately, we have other things that we want our users to run," he said, adding that they need to do presentations and what-if calculations for the brokers who sell Arm's annuities.

Merv Adrian, an analyst at Giga Information Group in Cambridge, Mass., said handheld users do have to store data and link to corporate servers. "But it's too early to tell whether a real database is something that needs to be carried around on one of those little devices," he said.

Oracle, in Redwood Shores, Calif., and Sybase, in Emeryville, Calif., plan to start testing their Windows CE releases in the second quarter. Also getting into the CE act is Raima Corp., a Seattle-based maker of databases for embedding packaged applications (see chart).

Joe Durocher, chief information officer at Hilton Hotels Corp. in Beverly Hills, Calif., said database-equipped handhelds could help speed hotel check-ins. But Hilton's first use of Adaptive Server Anywhere will be in a laptop sales application, Durocher said. "On the surface, [a handheld database] seems like it has potential. But we're going to have to think about this," he said. □

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Woman vs. woman
Single, childless women don't like picking up the slack for IS moms.
Ms. MIS, **page 74**

Managing

PHOTOS BY FURNALD/GRAY

Sapient's Lenny Gissel plays with a toy gun at a recent Super Saturday event at the company to show college students that humor is a way of life at Sapient

WE WANT YOU! *(please?!?)*

IT and non-IT companies are locked in a heated battle to attract today's top young talent. The good news: You don't have to be a Microsoft to make your mark on campus

BY NATALIE ENGLER

IT'S 1 P.M. ON A Saturday, and Sapient Corp.'s Cambridge, Mass., headquarters is bustling. Computer science, business and engineering students have flown in from around the country for a weekend of schmoozing and choosing.

In a third-floor room plastered with whiteboards, a team of six college seniors is engrossed in its task: Think up, then build, a gift to give a book-writing marine biologist. The group's technology: Legos.

The students wear stiff, dark suits and are observed closely by Sapient employees. But for the moment, they appear oblivious to their surroundings. Clustered around the building blocks, they brainstorm, count and assemble the colorful plastic pieces. They begin with a flat yellow floor. They snap on a blue bookcase, green bushes and a fish tank small enough for a sea monkey. Blushing, a baby-faced student suggests adding a couch. "She can sit and look at the fish!" he exclaims.

Welcome to Super Saturday, an event held eight times a year at the information technology consulting firm's offices in Cambridge, San Francisco and Atlanta. It's just one company's response to an employment marketplace that's so cutthroat that universities are turning companies away from job fairs and charging them to interview students. This talent shortage, combined with an estimated 20% to 30% turnover rate among entry-level programmer/analysts, according to Diane Tunick, a senior analyst at Gartner Group, Inc., have turned the battle to attract the Class of '98 into an all-out slugfest.

That's why companies are getting creative. Sapient's team exercise was designed not only to ensure a good cultural fit, but also to make sure candidates form a good impression of Sapient. Although evaluators are instructed to remain on the lookout for leadership skills, poise, confidence and teamwork abilities, they are also instructed to have fun, and help the students have fun.

By matching the right people with the right environment, Sapient's staff has grown by 300 during the past year and achieved a voluntary turnover rate that's among the industry's lowest. It isn't alone in its success. St. Louis-based Daugherty Systems, a 375-employee IT consulting firm, achieves a 90% entry-level job acceptance rate through a different strategy. It hires and trains music, chemistry and other noncomputer science majors.

Meanwhile, in Danbury, Conn., chemical manufacturer Union Carbide Corp. has learned to compete with glitzy software companies by developing a top-ranked internship program that received a glowing write-up in the 1997 *Princeton Review* "Guide to America's Top Internships." Ninety percent of the interns it hires are rehired as full-time employees.

The interns are encouraged to work on a variety of projects over the course of a season and learn cutting-edge technologies. They receive loads of responsibility and almost full corporate benefits. They also get on-site training, personal development programs and "brown-bag lunches" that enable them to meet with management. They're assigned year-round mentors who advise them about everything from grades and courses to future career paths inside and outside the company.

Union Carbide's popularity among students who work there puts it on nearly equal footing as high-tech powerhouses such as Intel Corp., Microsoft Corp. and MCI Communications Corp. And yet, even these three multibillion-dollar companies resort to extraordinary measures to hire just the right people. Intel, for example, offers stock options to each employee. MCI touts the beauty and lifestyle in Colorado Springs. And Microsoft, in some cases, has Bill Gates send electronic mail and make telephone calls.

With companies such as these working so hard, the pressure is on everyone else to become innovators. No, you don't have to offer beaches or even bonuses to lure top young talent. You do need a carefully constructed courtship based on a softer sell. "Hiring college students is not like hiring professionals," says Sue Keever, president of The Keever Group, a Dallas-based human resources consulting firm. "It's like dating. It comes down to the personality of the company."

A YOUTHFUL FACE

Friday, Nov. 14, 3:15 p.m.: About 30 recruits have arrived at Sapient's third-floor offices near MIT. Many just flew through a northeaster that doused New England with knee-high snow and slush. Others are en route because of delayed flights.

But Lenny Gissel doesn't let it faze him. The lead developer strides to the front of the room, introduces himself, and shares a Sapient in-joke. He wears oval designer glasses and a bemused expression. At 23, he exhibits more confidence than many 50 year olds.

He stands beside a monitor and demonstrates a client's World Wide Web site. As he speaks, the recruits nod in appreciation. Left unsaid, but not unnoticed, about Sapient is this: This is the type of project new hires could look forward to working on. Humor is a way of life. And entry-level employees get to work on high-profile systems using leading-edge technologies. Not bad for a 15-minute presentation.

Gissel's demonstration, along with the rest of the weekend's activities, made such an impression on University of Pittsburgh graduate student Inna Nirenburg that she accepted a job at Sapient in December. Her reasoning: "I wanted to work in a young, dynamic company, where innovation and creative solutions are rewarded, not suppressed."

Painting this sort of picture presents a marketing challenge that far too many companies ignore, Keever observes. She's in a position to know. She conducted focus groups and other primary research for companies that heavily recruit IT talent.

Some firms bait their hooks with bribes and bonuses. Then they mistakenly send jaded middle managers as their front men. "I've seen companies waste multimillion-dollar efforts by sending the wrong person," Keever says. "The students look across the table and ask themselves, 'Is this who I want to be in 10 years?' "

A MEMORABLE IMPRESSION

Consulting firms admittedly have a leg up on many non-IT companies. They are fast-paced and offer built-in career paths with a diversity of projects. Perhaps more importantly, they're seen as "hot," Keever says, because they're visible, active and show an interest in the students.

These are the same attributes that now bless Union Carbide. Sure, it doesn't have the sexiness of an Oracle Corp. or the entrepreneurial allure of a Sapient. But to engineering students on 14 select college campuses, Union Carbide is a household name.

Potential recruits mingle with Sapient executives over lunch

The company has worked hard at polishing its image, sending three or four people to cover each of its "core universities," which include Penn State, Howard, Purdue, Virginia Tech and Texas A&M. Union Carbide recruiters go to career fairs, give lectures, sponsor activities such as the annual crawfish boil at Louisiana State University and speak at events held by student engineering associations such as the Society of Women Engineers and the National Society of Black Engineers.

"It's all about name recognition," says Susan Raffetto, manager of staffing, who is in charge of entry-level hiring, including IS. "Once students know who we are, we're more than halfway there."

Still, Union Carbide can't afford to rest. That's why it created national teams to oversee its campus events. And in January, it launched an orientation program that gives new hires access to all of their managers so they know at the outset what will be expected from them during their first year. "Some people are doing signing bonuses," Raffetto says. "We're trying to look at more long-term strategies and partnerships."

What Union Carbide and others show is that a bit of creativity can go a long way toward getting hard-to-find talent. And in doing so, they prove that by combining masterful marketing with a strong presence, Keever says, just about any company can be a big fish on campus. □

Engler is a freelance writer in Arlington, Mass. Her E-mail address is nre@world.std.com.

MASTERING THE SOFT SELL

If you want students to give you a second glance, offer the following:

- **HONESTY.** Never talk down to students. "If you say 'We're big, bad, large and wonderful' at the information session, they say 'Yeah, right,' " says Sue Keever, president of The Keever Group. The key is to be honest about the company's strengths and weaknesses.
- **DIVERSITY AND INDIVIDUALITY.** This is generally more important to students than it is to older generations. "I [don't] want to be stuck working on a single, small piece of a project for a long period of time," says Inna Nirenburg, a University of Pittsburgh graduate student. "That would be boring."
- **TIME.** Ditch the "exploding offers" (accept-now-or-never arrangements). By forcing students to accept an offer before they're ready, you risk alienating them.
- **SECURITY.** Any reassurance you can build in to your offer (career paths, benefits plans, training) will be appealing.
- **PERSUASIVE PEERS.** Co-ops and interns return to campus and serve as the company's mouthpieces. Make sure their experience will lead them to speak highly of you. And send enthusiastic entry-level IS people to their alma maters to recruit.
- **NO CUBICLES.** Students told us they'd rather share an office with others than spend their days alone in a cubicle.
- **VARIETY AND RESPONSIBILITY.** At Sapient, entry-level employees such as Matt Tavis are given a chance to prove themselves right away. "Within weeks," he recalls, "I was standing in front of a room full of clients telling them, 'I don't think that's the way you should be running your business.' "
- **CUSTOMIZED EMPLOYMENT PACKAGES.** Those can include concierge services for frequent travelers, telecommuting, health insurance from day one, spousal placement, biannual performance reviews and mentoring.

Sources: Sue Keever; *Rocking the Ages: The Yankelovich Report on Generational Marketing*, by J. Walker Smith and Ann Clurman (HarperCollins, 1997); The National Association of Colleges and Employers; student and entry-level employee interviews

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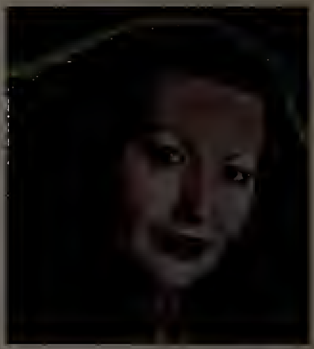
For more tips on how to recruit IT talent from colleges, as well as some helpful resources, look to our Web site this week: *www.computerworld.com*

Ms.MIS
WOMEN IN INFORMATION SYSTEMS

SINGLED OUT

Childless single women complain they're expected to pick up the slack for IS moms



BY LAURA DIDIO

"WHY SHOULD I GET ASSIGNED MORE TRAVEL AND MORE SPECIAL PROJECTS JUST BECAUSE I'M SINGLE AND DON'T HAVE ANY KIDS?"

The question startled and stopped the room, touching off a woman vs. woman debate in an otherwise unabashed female bonding session.

The scene was a seminar at the Women In Technology International Conference in San Jose, Calif., last summer. More than 100 female IT managers, executives and engineers were doing "exercises" designed to mimic real-life gender situations. Things were proceeding predictably — the women, myself included, were discussing the merits of how to get ahead in a man's world — when the question was posed.

The query was met with a sense of astonishment. A second woman said bluntly that it made sense to assign more travel and special projects that required work on nights and weekends to single and childless women and men because kids were much more important than anything else. "What do you have to do that's more important?" she challenged.

"My horse," the first woman responded.

"Oh, yeah, like your horse is really going to miss you if you don't show up one day," the first woman said.

"As a matter of fact, he would. Since I show him, I can't afford to have him or me miss our workouts. Otherwise we'd both be out of shape and risk possible injury. I'm single by choice, and why should I be penalized for that?"

After a few more verbal volleys, the subject was dropped. None of the women involved in the debate had been swayed. But it had touched a nerve.

I asked 12 female IS managers and engineers if there was a perception in their workplace that when there's extra work to be done, it's better to give it to single women with no kids because they don't have family responsibilities? In nearly all cases they answered with at least a qualified yes. But it isn't an obvious issue for most women until they're faced with it. Then the confrontations can be intense.

An IS manager at a large midwestern insurance company says she was pleased to find that there was another single woman in her department. "Things were fine when we were both single; we often worked long hours together," she says. But things changed when the woman's fellow IS manager got married and had a child.

"My friend started asking me to switch projects with her so she could go home earlier or not come in on weekends to do a network upgrade. At first I didn't mind, but it became a habit. When I finally said no, she acted surprised. She felt it was easier for me to adjust my schedule than it was for her. I told her my time was just as valuable even if I didn't have kids. It did strain our friendship for a good bit of time," the IS manager says.

According to the single women at the conference, mothers don't comprehend that there are other commitments besides home and children that are just as pressing.

Eva Chen, chief technology officer at Trend Micro Devices, Inc. and the married mother of two, said she never gave frequent or last-minute travel requests a second thought when she was a single engineer. But Chen found out firsthand just how touchy this issue was when she asked a single female IT manager to travel on short notice. The IT manager hesitated because of her dog.

"I thought it was ridiculous that she couldn't go because of the dog. But after it happened a couple of times, I realized she considered the dog to be her baby, and I began treating it as a legitimate issue," Chen says. "I resolved it the same way I did with any woman with children. That is, I give them as much advance notice as possible so they can make the necessary arrangements."

@ COMPUTERWORLD

Laura DiDio will conduct a forum this week on our Web site on the issues addressed in this column: *www.computerworld.com*

Kristin Marks, vice president of Networks Are Our Lives, an information management consulting firm in Sherman, Conn., said she got a lot of extra projects "shoved" at her when she was single and just starting out as an IS manager. "My bosses just naturally assumed I had free time to spare because of my single status — nights, weekends, holidays — and that they could call me to fill in at a moment's notice," Marks recalls.

At the time, she says, she didn't protest because she was new to the industry and needed the job. "But as I became more experienced, I realized I had leverage — especially since the law of supply and demand was on my side," Marks says. "In one instance I did threaten to walk out if things didn't change, and that worked."

Now married with two teen-agers and her own business, Marks says it's apparent that women and men alike give you more latitude because of kids. "Is is fair? No. But if you're single, you have to state your case up-front and push back when necessary. Being single doesn't mean [being] second-class; there are plenty of IS jobs to be had," she says. ☐

DiDio is Computerworld*'s senior editor, operating systems and security.*

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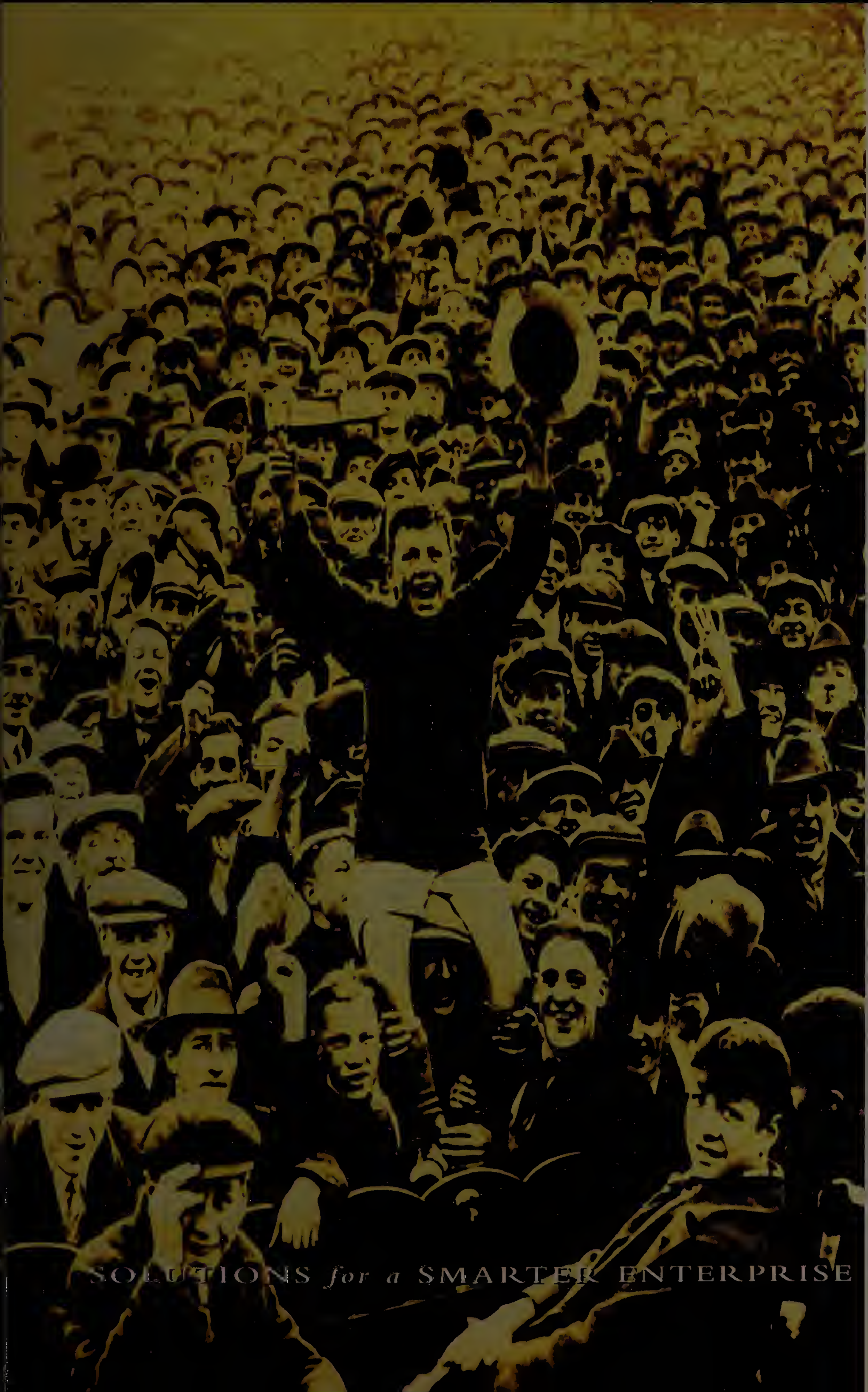
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WHY THE CA/CSC MERGER WAS DOOMED FROM THE START

JIM CHAMPY

Computer Associates CEO Charles Wang doesn't realize just how lucky he is that Computer Sciences eluded his grasp. The combination would have been a disaster, despite all the ballyhooed "inherent synergies" Wang envisioned.

CA's failed bid is just one more example of the high-tech adage: When it comes to merging technology companies, they never learn that the promised synergies rarely emerge. Quick, now, name one that has worked well. IBM/Lotus? Maybe. Compaq's recent takeover of Digital? It looks promising, but the jury's still out.

There's no question that the information technology industry is restructuring. And that product companies are rushing to team with or acquire services firms. Indeed, on the day CA failed to extend its bid for CSC, Xerox paid $415 million for networking services provider XLConnect Solutions and its parent. Three days before that, Wang Laboratories bought Olivetti's computer services unit for some $430 million.

But whether these deals will be good for customers, employees and shareholders is far from obvious. Meanwhile, I'm reminded of Chuck Exley's prophetic warning back in 1991. Exley, the former CEO of NCR, said AT&T's unwanted $7.4 billion takeover offer — billed at the time as a marriage made in heaven of networks and computing power — was "like an electric company wanting to get into the Mix Master business."

Something similar might be said of packaged software provider CA's naive bid for a services company. But before I continue, a disclaimer:

I've spent my career in services and, at one time, headed CSC's consulting group. I no longer have any financial ties to CSC, but just so you know where I'm coming from, my own company has a business approach very similar to CSC's: We are strictly vendor neutral. All of that makes me believe CA's attempt to acquire CSC was shaping up as a textbook case about illusory synergy.

OIL AND WATER

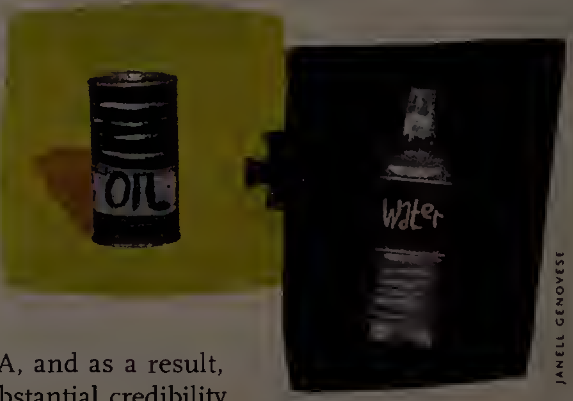
CA is a classic products company. It goes to market selling the capabilities of its products. It competes on the basis of technology innovation and price.

CSC is a classic services company. It competes on the basis of understanding its clients' business and technology problems and crafting custom solutions. These can be as extreme as the complete outsourcing of a client's IT function — the kind of work that has fueled CSC's most recent growth.

But CA has determined it must get into the services business, just like its competitor, IBM. Wang argued that he needed CSC's services channel to sell his software products. He also argued that buyers of IT products and services increasingly want to buy from one source. Both beliefs are seriously flawed. And the idea of just turning a technology products company into a "solutions" company is dangerously old.

Bringing CSC and CA together would have been like getting an elephant and a giraffe to mate. How they approach their respective markets is just too different. The only way the acquisition could have worked is if CA purchased CSC, then left it alone. Electronic Data Systems appears to be doing that successfully with A. T. Kearney. But Wang seems to have envisioned CSC mostly as a giant value-added reseller, not as a subsidiary with occasional crossover clients.

CSC's chairman, Van Honeycutt, argued the point forcefully in a letter to Wang: "CSC's ability to provide independent solutions is a threshold issue for customers who demand platform neutrality. This neutrality would be severely compromised if CSC were to be acquired by CA, and as a result, we would lose substantial credibility in the marketplace."



JANELL GENOVESE

Evidently, Wang really believes the market wants providers — such as IBM — that can be a single source of combined products and services. After all, IBM has grown a huge services business out of a products company. But that's exactly the point: IBM was a products company to begin with. There has never been any doubt it would be selling IBM products and services.

As for customers wanting a single product/services source, I have yet to find a sophisticated customer who wants it that way. Internal IT organizations are increasingly capable of handling integration on their own. They are picking and choosing the best the market has to offer and putting it together themselves.

What all this merger and acquisition activity is hiding is an even bigger business shift. Companies, especially large ones, are just not outsourcing their IT functions as readily as they have in the past.

They're looking for special partners that can help them reinvent their business, using technology as a key lever. It is a relationship between IT providers and clients that goes beyond outsourcing or products. It means that IT providers must learn to create new businesses with their clients.

So what's to learn from these deals? The lesson is to keep asking two simple questions: Will the new business created by the combinations be worth all the management time necessary? Does the reality of the market really support them?

Time will tell. But history sets a poor precedent. Unisys just recently took a $1.1 billion charge to write off its 1986 acquisition of Sperry, exiting the PC business to concentrate on services. And after five years in the AT&T blender, a sadly diminished NCR was spun off two years ago.

It turns out Exley had it absolutely right: Mixing different kinds of technology companies together always makes good PR froth, but rarely does it make long-term business sense. ☐

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. His Internet address is JimChampy@ps.net. His newspaper columns are syndicated by Tribune Media Services.

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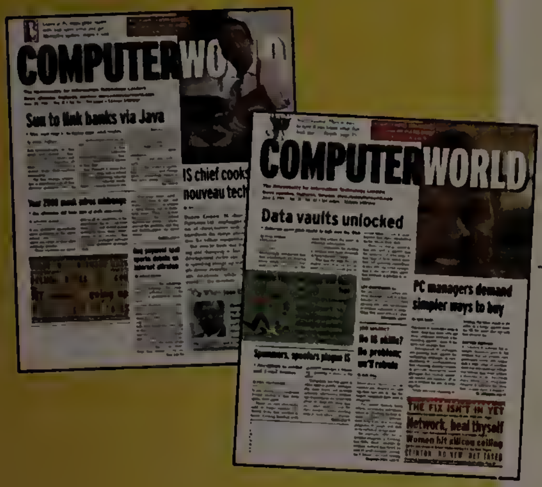

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A selection of our best Java reviews. Page 81

Review Center

Java tools

JAVA JOURNEYS

by Amy Malloy

Java development tools are in their infancy, lagging behind other types of enterprise-oriented tools, according to pioneers on the leading edge of Java development

Have you ever used a 1.0 tool you could totally rely on? Neither have 20 Java users we recently surveyed. They told us Java tools are young. They need work. They are 1.0 in reality, if not in name. And developers aren't in the mood to put up with tools they can't get to work on the first try.

Some users are really banging the language around by building significant Java applications, and they need tools that can keep up. It's true that most corporations are still playing with Java, but there are companies that are surprisingly far along with it. They are the early adopters, the visionaries, the devotees, the risk-takers.

We asked such users to describe their journey into the uncharted world of Java. We commissioned 20 interviews from Market Data Group in Framingham, Mass. We asked the subjects to tell us about their Java experiences, why Java is important to them, which Java development tools they're using and how those tools meet their needs. Those 20 clearly are committed to Java. But in calling several hundred organizations to find users who are able to discuss their Java tools, Market Data Group observed that most sites are still in experimentation or pilot stages.

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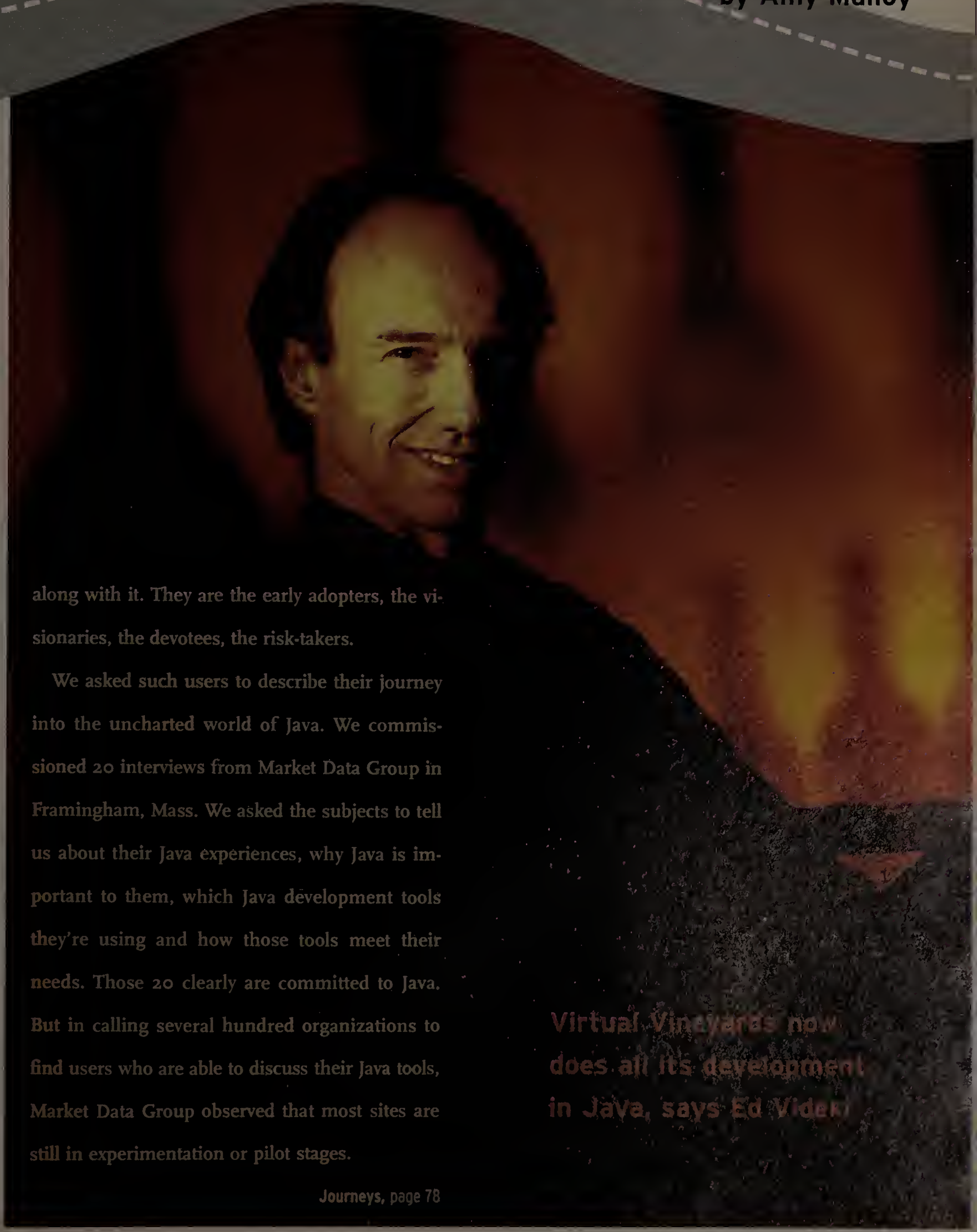
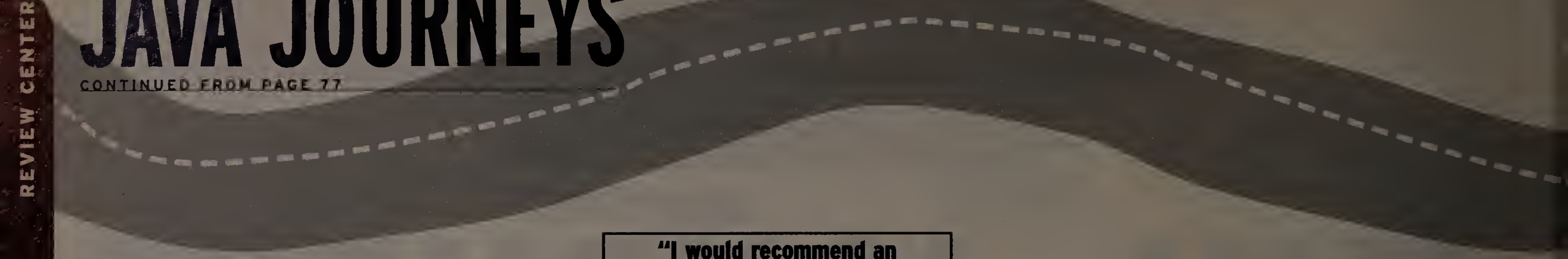


Virtual Vineyards now does all its development in Java, says Ed Videki

ERIC MILLETTE

JAVA JOURNEYS

CONTINUED FROM PAGE 77



WHICH TOOL?

Java pioneers are using a variety of development tools, but Symantec Corp.'s Visual Cafe was cited the most.

Other tools mentioned were IBM's VisualAge; Borland International, Inc.'s JBuilder; Sun Microsystems, Inc.'s Java WorkShop and Java Development Kit (JDK); NetDynamics, Inc.'s NetDynamics; Microsoft Corp.'s Visual J++; Sybase, Inc.'s PowerJ; Vision Software Tools, Inc.'s Jade; and ModelWorks Software's JPadPro.

As one of the first Java tools on the market, Visual Cafe leads the vendor pack in market share, but it may not do so for long. "I don't think that they have the major lead over everybody else any longer," says Anne Thomas, an analyst at Patricia Seybold Group in Boston.

Users aren't bothering with a tool if it doesn't work well from the start. "We looked at Microsoft J++, but we couldn't get the demo to work with our software and didn't investigate further," says Sean Moore, division scientist and director of scheduling and optimization at BBN Corp., a Cambridge, Mass.-based unit of GTE Corp.

> **"I would recommend an 'outside-in' strategy. Start with the component that's on the user's desk and, using a tool, design the GUI so that this part of the application is already platform-independent. You won't have a performance risk there."**
> **– Jeffry Borror, Daiwa**

Some of the major conclusions we drew from interviews with 20 companies building applications with Java:

- Platform independence is the main reason for using Java.
- Java development tools need to provide additional capabilities, such as better debuggers and full CORBA compliance, to catch up with other development tools on the market.
- Those we spoke with plan to continue creating Java applications, and most of them expect to greatly increase their Java commitment.
- The rapid rate of change with Java makes it hard to keep up with the technology.
- Compatibility with various releases of popular browsers is a common concern for developers.

The interviews were conducted in February by Market Data Group, a research firm in Framingham, Mass.

"There is no loyalty in this market — none," says Daryl Plummer, research director of Internet development at Gartner Group, Inc. in Stamford, Conn. Companies are evaluating and piloting products all the time, he says.

That is the case at The Home Depot, Inc. Though the Atlanta-based retailer is happy with JPadPro, it is evaluating JBuilder for future projects. "[Borland was] the last to market. They have, by far, built the best tool I've seen," says Curtis Chambers, manager of distributed application architecture at Home Depot. He says he likes the way JBuilder handles layout managers, generates code and works with JavaBeans and interclasses.

Some users are building applications with multiple tools. "We are actually mixing the tools to leverage the best of each," says Pierre Samec, vice president of software engineering at Charles Schwab & Co. in San Francisco. Samec says Schwab uses JBuilder, Cafe, VisualAge and Java Workshop. Schwab uses Workshop and VisualAge for server-side development because of heavy development it does in Unix and MVS.

When choosing a tool, each company based its evaluation on unique criteria, but many of the users polled stayed with vendors they had used before. NationsBank Corp. had done a lot of development with Borland's Delphi package and found JBuilder's development environment to be similar. "We could spend our time training in the new language rather than a new development environment," says John Melka, a bank vice president and senior systems engineer. The tool also offered the best Common Object Request Broker Architecture (CORBA) integration, good component architecture and unit testing, he adds.

COMPLAINTS

Users say the tools are doing a decent job, but every user has a list of complaints.

High on many of those lists is a desire for more JavaBeans, which are reusable software components. For example, users say they want libraries of beans, such as a word processing bean or a spreadsheet bean. For GTE in Irving, Texas, integrating JavaBeans using Visual Cafe is clean because Cafe's components and development modeling is an open environment, says Shadman Kafar, a senior technical manager at the company.

Other users want to see more third-party vendors offering beans and more drag-and-drop capabilities. Bob Goodwin Jones, director of instructional development in the office of information technology at Virginia Commonwealth University in Richmond, Va., says he would like to do more drag-and-drop development.

Performance and stability are still issues for most companies that use Java development tools. BBN uses Java Workshop, which lacks a just-in-time compiler. That slows down development, Moore says. On the flip side, Java Workshop is reliable, he says.

Although Service Merchandise Corp. finds scalability to be NetDynamics' greatest strength, it also found that large projects are difficult because there is no management that lets several people develop jointly, says Dan Mushrush, director of new technology at the Brentwood, Tenn., retailer. Also, there isn't much in the way of libraries, so object reuse is limited, he says.

NetDynamics' programmer environment could be more programmer-friendly, says Sanjeeb Kumar Patro, worldwide webmaster of the turbocharging systems division at AlliedSignal, Inc. He wants more functionality in the debugger and improved application runtime performance.

Other users added complaints about debuggers. Xerox Corp., which uses Visual Cafe, finds that the debugger often crashes the developer's machine. Crashes also have been a problem for Cafe user Shiva Corp. in Bedford, Mass. Shiva reports that a lot of crashes occur when developers have many files open. But a fast compiler is the tool's greatest strength, says Kristie Henderson, product line manager.

BROWSER WOES

Compatibility with browsers was a problem cited by many of the interviewed users. First Union Bank in Charlotte, N.C., would like to use Sun's newer JDK 1.1, but Netscape Communications Corp.'s Navigator browser doesn't support it, complains Tom Hewitt, vice president of fixed-income technologies.

ADVICE
from the trenches

"Proceed cautiously with a few projects to try out what will work in the real world vs. what will work on the development platform." — *Bob Goodwin Jones, Virginia Commonwealth University*

"It needs to be a more entrepreneurial project. Here you choose your best analytical people." — *Shadman Kafar, GTE*

"Train your people." — *Pierre Samec, Charles Schwab*

"Stick with what's provided by the JDK or third-party vendors." — *Sean Moore, BBN*

"Do limited applications. Building applets is a much safer task than writing entire applications at first." — *Kristie Henderson, Shiva*

"Get adequate training before you start putting applications together, understand the availability of skills in the marketplace, and don't build an island — integrate application-wise and people-wise." — *Dan Mushrush, Service Merchandise*

"If you are developing applets that must run in all standard browsers on multiple platforms, you must test all possible configurations. You cannot assume that all browsers behave the same way." — *Bill Kennan, NesTek Development*

"Buy rather than build. Java lends itself to this, so that everything doesn't have to be built in-house." — *Curtis Chambers, Home Depot*

The slow rollout of JDK 1.1-capable browsers also bothers developers at Xerox. "Developers are at the mercy of Netscape and Microsoft when it comes to problems with Java implementation within browsers," says Bill Kennan, vice president of business development at NesTek Development Corp., a sys-

tems integrator that works with Xerox.

The browser issue led Virtual Vineyards in Palo Alto, Calif., to hold back on using Java applets and to restrict Java use to the server. Many of the online retailer's customers still use older versions of browsers that don't support Java applets. Virtual Vineyards expects to include applets before the end of the year.

There is help on the horizon. Sun has produced Java Activator, which is basically a plug-in capability for browsers that lets them run the latest release of the JDK, Plummer says. Early release of Java Activator is available from Sun now, and the final release will be out next month, according to Sun. Companies can use Java Activator for internal Java deployment so they don't have to rely on the browser vendors to implement it. It runs with Microsoft Internet Explorer 3.02 and higher and Netscape Navigator 3.0 and higher.

Another concern expressed by the interviewed Java users is the language's rapid rate of change. They say they would like to see more scheduled releases of the JDK.

"Sun comes out with new package names and new class libraries so fast that it's a challenge to keep up with it all. A solution might be to have more regular [scheduled] sets of releases as opposed to the current approach," says Ed Videki, director of electronic commerce and chief scientist at Virtual Vineyards.

Analysts understand user gripes, but they advise companies to be realistic. Users may complain about their graphical user interface builder, their debugger or their integrated drive electronics (IDE), but Java's been around for only two or three years, Plummer says. "You have to give it time," he stresses.

STANDARDIZATION

An important future development will be Enterprise JavaBeans, which will be incorporated in tools this year, according to analysts. Plummer says Sun's Enterprise JavaBeans implementation will be a key move in the Java market. According to Sun, Enterprise JavaBeans is a set of specifications, a cross-platform component architecture for the development of multitier, distributed, scalable, object-oriented Java applications.

Enterprise JavaBeans makes transactional services possible and provides directory and naming services, Plummer says. That's necessary for a technology to be scalable, he says. CORBA also will experience some changes this year. CORBA 3 is scheduled to be finalized this summer, Thomas says. Part of the CORBA 3 specification is a component model, which is turning out to be very similar to the JavaBeans component model, she says. "Once the component models are in place, that is going to dramatically automate the development of multitier client/server applications and distributed component systems," she says.

Right now, users are running into some problems using CORBA with their Java tools. Several of those we spoke with are using CORBA as middleware to link back-end systems to Java-based front-end applications. They are looking for stronger integration of CORBA development tools with Java IDEs.

"The learning curve of CORBA is more complex, which in some cases is not necessary," Kafar says. "Most of the vendors have not completely implemented all the CORBA standards." GTE uses CORBA to access Unix-based systems to link to Java applications.

Analysts say CORBA and Java will work increasingly well together in the coming years.

"We believe that Java and CORBA will merge over the next few years into a specification that is pretty much equivalent to one another," Plummer says. ☐

Malloy is Computerworld*'s associate editor, Review Center.*

CASE STUDIES

The Home Depot, Inc.

When a potential employee applies for a job at one of Home Depot's 700 stores, the application automatically goes out to all the other stores in the area. That increases Home Depot's chances of filling positions and reduces pavement-pounding for the job seeker.

The retailer plans to expand that Java employment-tracking application into a paperless benefits system. And those are only two of the many Java applications Home Depot is working on. Hoping to improve ease of use for end users and reduce client support costs, it has Java-created applications in various stages.

Home Depot also has in place a virtual office application that district managers can use to download inventory and sales information to a local PC. Reports that used to be created by each district manager's administrator now show up on the managers' PCs when they log in. That eliminates the need for a physical office and an administrator, says Curtis Chambers, manager of distributed application architecture at the Atlanta company.

Home Depot also has an inventory management application in place and a vendor data exchange application in the works.

The company is far along with its Java development with good reason: It started evaluating Java development tools a year ago. At that time, Chambers found the pickings slim. Home Depot put products such as Symantec Corp.'s Visual Cafe, Sun Microsystems, Inc.'s Java WorkShop and IBM's VisualAge through the paces and didn't like what it found. The retailer ended up going with JPadPro, an integrated development environment from ModelWorks Software in Colorado Springs that Home Depot uses for editing.

Although JPadPro lacks an integrated debugger and a screen designer, Chambers found that its flexibility makes up for that loss. "It's built completely in JavaScript, so I can customize every part of the tool," he says.

Home Depot also uses Epic from Novera Software, Inc. in Burlington, Mass., to write CORBA-compliant client/server applications using Java code. "You don't have to know anything about Common Object Request Broker Architecture [CORBA] or be savvy in Interface Definition Language [IDL]," Chambers says. CORBA is an application framework that provides interoperability between objects, and IDL is a language used to describe the interface to a function or routine. The product helps Home Depot build three-tier applications for in-store development, Chambers says. "The Novera product is top-notch," he says.

Home Depot uses Menlo Park, Calif.-based NetDynamics, Inc.'s NetDynamics, which was a key tool for the virtual office project.

"It gives me Java classes that allow me to build [Hypertext Markup Language] in my Web browser," Chambers says. To users, it looks as if they are clicking another link on the World Wide Web page, but pages are actually being created on the fly, he says. NetDynamics provides the classes on the server to make that happen, he says.

Home Depot is looking at JBuilder from Borland International, Inc. for future development projects, but Chambers says no decision will be made until existing projects are finished. ☐

Daiwa Securities America, Inc.

The Holy Grail of Wall Street is straight-through processing, which is when a trade enters once and flows through all of the systems. That is rarely achieved.

New York-based Daiwa hopes to accomplish that rare feat. The company eventually would like to route data from front-office systems to back-office systems by building a middle-office system written in Java and using middleware from Active Software, Inc.

By using Java, Daiwa gains platform independence, the ability to run in a variety of operating environments. Microsoft Corp.'s Java rival Java rival ActiveX (information technology director Jeffry Borror jokingly calls it CaptiveX), lost on that count. A second selling point for Java was Daiwa's need to run distributed applications over internal and external networks in Java, Borror says.

EDWARD SANTALONE

Jeffry Borror of Daiwa Securities America, Inc.

Daiwa is enthusiastic about Java and plans to do 70% of its development in Java a year

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JAVA JOURNEYS

CONTINUED FROM PAGE 79

CASE STUDIES

Daiwa Securities America, Inc., continued

from now, but the company isn't moving its entire organization to Java in one fell swoop. "We don't want to throw the switch and have the lights go out if we find problems with Java," Borror says.

So Daiwa started small. The company now runs two trade-processing systems written in Java. Another system coming out next month will handle small-quantity trades of U.S. Treasury bills. It will combine Java-based middleware with Secure Sockets Layer encryption to put out bids and offers, and it will receive trades over the Internet.

Borror had a hard time deciding on a development tool. After trying many of the tools available, he says he "threw up his hands in despair." Borror finally settled on JBuilder from Scotts Valley, Calif.-based Borland International, Inc. The initial beta didn't impress him, but the final beta release "snapped into focus," he says.

JBuilder still has some bugs, but the productivity gains are greater than the losses, he says. Among the remaining problems is a limited graphical user interface builder set — the inability to cut, copy and paste. It isn't a big problem, he says, just annoying.

He also says the online documentation could be more thorough, and full support for Java Foundation Classes and more wizards would help round out the product.

Borror gives JBuilder a thumbs-up for being written primarily in Java. It indicates to him that Borland has real expertise in Java.

Daiwa also relies on Borland for back-office database connectivity, using Borland DataGateway for Java to tie trading systems to Daiwa's Informix Corp. and Sybase, Inc. databases.

At the top of Borror's wish list are libraries of JavaBeans from third-party suppliers, such as an industrial-strength spreadsheet JavaBean or a word processing bean that could be dropped into an application. He also wants more sophisticated source code control features, utilities, report writers and integration with middleware. □

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Looking for a Spanish dessert wine that isn't too sweet? Trying to find those chocolates you love but can't get your hands on anymore? Virtual Vineyards promises to help you.

Virtual Vineyards, an Internet-only wine and gourmet-food retailer, is building a new World Wide Web site designed to act "more as a human helper than a Web site," says Ed Videki, director of electronic commerce and chief scientist at the Palo Alto, Calif.-based company.

Java will play a key role on Virtual Vineyard's site, which is being tested by customers. Virtual Vineyard now does all of its development in Java. It found that its existing site, which was written in Perl, "has become hard to scale and hard to maintain," Videki says. The retailer was looking for a "compiled programming language that would more easily allow object-oriented design and development, modularity and scalability," he says. Java fit the bill.

When looking for Java tools, Virtual Vineyards considered Scotts Valley Calif.-based Borland International, Inc.'s JBuilder; Microsoft Corp.'s Visual J++; and Mountain View, Calif.-based Silicon Graphics, Inc.'s Cosmo Code, but it went with Symantec Corp.'s Visual Cafe because "it works," Videki says. The tool is intuitive, easy to use and relatively bug-free, and it handles both server code development and graphical user interface development, he says.

Visual Cafe does need some improvement. Videki says he would like to see Symantec and its competitors offer platform-independent interchange files so that a tool for one machine can communicate with a tool used on a different type of machine. With that capability, source code could travel back and forth. Videki says he also would like a choice of editors.

Those concerned about Java's performance should set aside their worries because every year Java virtual machines get faster, he says.

Videki says Symantec does a good job of keeping on top of updates to Sun Microsystems, Inc.'s Java Development Kit (JDK), but he would like Sun to more carefully schedule JDK releases and updates.

Some of his developers like JBuilder, so there's a possibility that they will use it in the future.

On the back end, Virtual Vineyards needs communications between the Web site and business systems. The retailer chose Netscape Communication Corp.'s Kiva enterprise server to build that link. The reason was that Kiva has excellent features and integrates the retailer's Java code very well with other facilities, such as Web servers and a relational database management system, with a uniform application programming interface, Videki says. □

JAVA TALKIN'

Users tell the whys, whats and hows of their experiences

When Java showed up on the scene, it basked in the media limelight, throwing promises around like a politician. And a lot of companies elected to take the language at its word.

We asked users at 20 sites to share their reasons for choosing Java and to tell us what type of applications they are building with it.

WHY JAVA?

WE COULD FILL UP a whole page with quotes explaining why these users like Java, and just about every one of them would include either the word "portability" or "multiplatform."

"Portability has saved my neck," says Sean Moore, division scientist and director of scheduling and optimization at BBN.

Another thing that became clear was that most of the interviewed companies chose Java because of the "write once, run anywhere" claim for the language. That prospect means a lot less work.

Cost is another reason the interviewed companies went with Java. IS staffers no longer have to travel to do software upgrades and patches because Java provides "zero install at the desktop," says Terrison Gregory, director of decision-support applications at Pacific Bell Video Services in San Ramon, Calif.

WHAT'S IT USED FOR?

ACCORDING TO INTERVIEWED USERS, Java isn't best suited for any particular application.

The surveyed companies are using Java to do a range of things, from creating trading systems to building generic applets. Other examples are applications for operations such as ordering, telemarketing, electronic commerce and manufacturing — pretty much everything and anything.

For example, NationsBank in Charlotte, N.C., which needs to supply officers, staff associates and bank customers with financial information, is using intranet/extranet and Internet applications written in Java to do the job.

One of NationsBank's "more mundane" but useful applications is the associates telephone book, which contains 6,100 employee names. With Java, the phone book is available through a browser, which cuts costs, says John Melka, a NationsBank vice president and senior systems engineer.

Charles Schwab & Co. is looking to deliver more interactive World Wide Web clients with Java, says Pierre Samec, vice president of software engineering.

But it's important to keep in mind that not all the users we interviewed have struck gold with Java, or at least not on the first try.

WILL IT LAST?

ONE THING THESE COMPANIES have in common is a desire to continue using Java. None plans to decrease its use of Java. In fact, most plan to up Java development over the next year.

GTE is one of the companies on an upward path with Java. GTE looks at its use of Java separately on the front end and the back end. Over the next year, it plans to make Java the front-end core technology for new applications. GTE currently does less with Java on the back end, but over the next year, it plans to about double such use. About six months ago, GTE had six Java projects under way; there are now between 20 and 25.

Most companies aren't moving quite that rapidly. Over the next year, most of the companies we contacted say they will increase Java use by 10% to 20%. Some are taking a conservative approach and keeping Java development at its current level.

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JAVA FROM SQUARE ONE

By Howard Millman

OVERALL **B** GRADE

PRODUCT REVIEW
▸ *Complete Java Training Course (Second Edition)*

DEITEL & ASSOCIATES, INC.
Framingham, Mass.
Published by Prentice-Hall, Inc.
(800) 881-0912
www.phptr.com

Summary: An interactive CD-ROM and 1,000-page manual provides a method to learn Java at your own pace. Best suited for programmers with C/C++ skills.
Development platforms: Windows 95/NT, Macintosh and Solaris
Price: $99.95

That huge whooshing sound you hear at recruitment fairs comes from the vacuum created by companies looking for Java programmers. Prentice-Hall's interactive CD-ROM tutorial and manual can help highly motivated programmers with C/C++ experience fill that vacuum.

This self-teaching, self-paced training program provides an excellent introduction to Java if you are an experienced programmer. Novices with little or no coding expertise, however, face an uphill climb.

ONE SIZE CAN'T FIT ALL

Prentice-Hall perhaps makes too bold a claim when it offers this course to both trained programmers and novices. The package contains a wealth of insight, tips and coding strategies, but newbies will likely find the course heavy going in places. For example, the first lesson begins with "What is a computer?" and then goes on to discuss object properties, such as classes and inheritance.

To their credit, the authors adequately describe complex concepts, such as classes, inheritance and polymorphism by introducing them in the context of real-world problems.

Information in the course's 18 chapters range from the elementary to such advanced topics as object-oriented programming and multithreading. The package includes a complete copy of Sun Microsystems, Inc.'s Java Development Kit (JDK) 1.1. The authors liberally inject each chapter with useful hints and tips that they logically collect under headings such as Good Practices, Common Errors and Debugging Tips. Portability Tips, a topic of particular interest to Java programmers, deals with, yes, cross-platform portability. Many of the suggestions have merit.

Every chapter ends with a bullet list that summarizes its key points. The authors include more than 500 sample programs containing a total of 12,000 lines of Java code. To illustrate each programming topic, they analyze that code in considerable detail.

A set of eight navigation buttons, permanently displayed along the bottom of the main window, gives immediate access to the sample programs and to hints associated with the current chapter. The eight navigation buttons would benefit from some annotation or pop-up "tooltip" prompts because the connection between the image and the button's function is sometimes obscure. That would avoid time-consuming visits to the manual to investigate the buttons' functions.

As a means of compensating for the varying skill sets of the buyers, the manual's introduction recommends different starting points. For example, experienced C++ programmers are advised to start at Chapter 8. But if students follow that advice, they will miss important and significant differences between Java and C/C++ that lie buried in the initial chapters.

The safest strategy for students, whatever their level, is to start at the beginning and quickly scan through the first few chapters. That would be easier if each chapter listed the important differences between Java and C/C++ syntax. I would also like to see a glossary.

ROOM FOR IMPROVEMENT

The package suffers from a series of minor shortcomings that overshadows its high-quality information. For example, Cyber Classroom, a presentation format, somewhat underwhelms. Heavily text-based, it generally repeats the same information (and in the same words), found in the accompanying manual. Also, I would have preferred to view more than the limited amount of information typically displayed per page — about a dozen lines of text. I often found it easier to read the book and then use the software to execute the sample programs.

The voice-overs, totaling about four or so hours, provide useful additional information, but they're best taken in small doses. I also would have preferred if Prentice-Hall used a professional speaker rather than the author. At the least, the publisher should have eliminated the occasional "ers" and "ums." And in several instances, the source line numbers referred to in the audio track were out of sync with source code displayed on screen. Such errors pose an unwarranted distraction as you try to follow a complicated explanation.

The software includes a Java runtime environment. It also links to a Sun site where you can download the full JDK 1.1 and compiler. □

Millman operates Data System Service Group LLC, a consultancy in Croton, N.Y. He can be contacted at (914) 271-6883 or hmillman@ibm.net.

Recent JAVA REVIEWS

Most Java development tool vendors have refreshed their product lines since Sun Microsystems, Inc. released its Java Development Kit 1.1 in the fall. Here are snapshots of *Computerworld* reviews of some of the other Java tools released in recent months. The reviews are available on our World Wide Web site (*www.computerworld.com*):

"Java tool adds simple links to data" by Howard Millman [CW, Jan. 12]

"Symantec Corp.'s Visual Cafe for Java, Database Development Edition, will help professional developers build Java-based applications that link to back-end databases. . . . The package includes some worthwhile time-savers such as a drag-and-drop visual forms editor that builds links between the front-end (user interface) and the back-end databases using Java Database Connectivity (JDBC), Open Database Connectivity (ODBC) and native drivers."

IBM
www.ibm.com

PRODUCT REVIEW
▸ *Visual Cafe for Java, Database Development Edition, Version 2.1*

OVERALL **B** GRADE

SYMANTEC CORP.
Cupertino, Calif.
www.symantec.com

Platforms: Windows 95, Windows NT, Macintosh

Price: $500

Pros: An intuitive, comprehensive development environment that generates pure Java code. Native x86-and Java Virtual Machine-compatible compilers accelerate Java's underwhelming runtime performance.

Cons: Sporadically reported syntax errors where apparently none existed.

"JBuilder Pro: The Prince of IDEs" by Howard Millman [CW, Dec. 8, 1997]

"Borland's JBuilder Pro offers developers a flexible, productive tool set that's easy to learn and live with. . . . Overall, this is certainly among the best of the second-generation Pure Java RAD tools."

Borland International, Inc.
www.borland.com

PRODUCT REVIEW
▸ *JBuilder Pro, The Prince of IDEs*

OVERALL **A** GRADE

BORLAND INTERNATIONAL, INC.
Scotts Valley, Calif.
(800) 233-2444
www.borland.com

Pros: Superbly integrated; 100% Pure Java code; relatively flat learning curve, especially for previous Borland users; fully supports Java Development Kit 1.1 The forthcoming client/server version will offer versions control, CORBA and more SQL tools.
Cons: Java's runtime execution is sluggish, as it is with JBuilder's competitors.
Development platforms: Windows 95 and NT
Price: JBuilder Professional — $299 upgrade/
$799 otherwise
JBuilder Standard — $99
JBuilder Client/Server - $2,495

"Sapphire melds Web/databases" by Ross M. Greenberg [CW, Nov. 17, 1997]

"It took me four days of battling installation problems to reach the conclusion that Bluestone's Sapphire Web 4.0 is pretty cool. . . . The product is a well-designed graphic user interface-based rapid application development tool with native hooks to all major database products."

Bluestone Software, Inc.
www.bluestone.com

OVERALL **B+** GRADE

REVIEW ▸
Sapphire/Web, Version 4.0

Bluestone Software, Inc.
Mount Laurel, N.J.
(609) 727-4600
www.bluestone.com

Pros: Powerful Web-to-database development package with thought-out bells and whistles. Interfaces easily with standard databases and ODBC. Nice GUI development environment.

Cons: Touchy about Java and server versions. Installation and configuration error messages aren't helpful. Learning curve is steep to start.

"All-in-one Java development" by Ross M. Greenberg [CW, Oct. 27, 1997]

"IBM's VisualAge for Java, Enterprise Edition, isn't for the fainthearted. . . . It takes an investment in time and effort, particularly if you have no experience with IBM's other VisualAge products. It is also an extraordinarily powerful application development tool, offering secure access to legacy and remote data in heterogeneous client environments."

Symantec Corp.
www.symantec.com

VisualAge for Java, Enterprise Edition, Version 1.0

OVERALL **B** GRADE

IBM
Armonk, N.Y.
www.ibm.com/ad/vajava

Price: $1,995
Pros: Very visual, reasonable to make distributed Java applications
Cons: Bloated code, lengthy learning curve
Ease of use: B-
Features: A

"Sun's Java WorkShop grows up" by Howard Millman (CW, Oct. 27, 1997)

"Sun Microsystems, Inc.'s second attempt at a Java development environment, the newly released Java WorkShop Version 2.0, is a stable, scalable and robust multiplatform Java development tool set. . . . JW2 still shows its youth when compared with the vast selection of C++ environments, add-ons, peripheral support and class libraries."

Sun Microsystems, Inc.
www.sun.com

OVERALL **A** GRADE

PRODUCT REVIEW ▸
Java WorkShop Version 2.0
Sun Microsystems, Inc.
Mountain View, Calif.
(800) 786-0404 www.sun.com

PROS: Improved graphical interface, multiplatform support, full compatibility with Java Development Kit 1.1 standards, support for JavaBeans.

CONS: Lacks the maturity of C++ and its numerous add-ons.

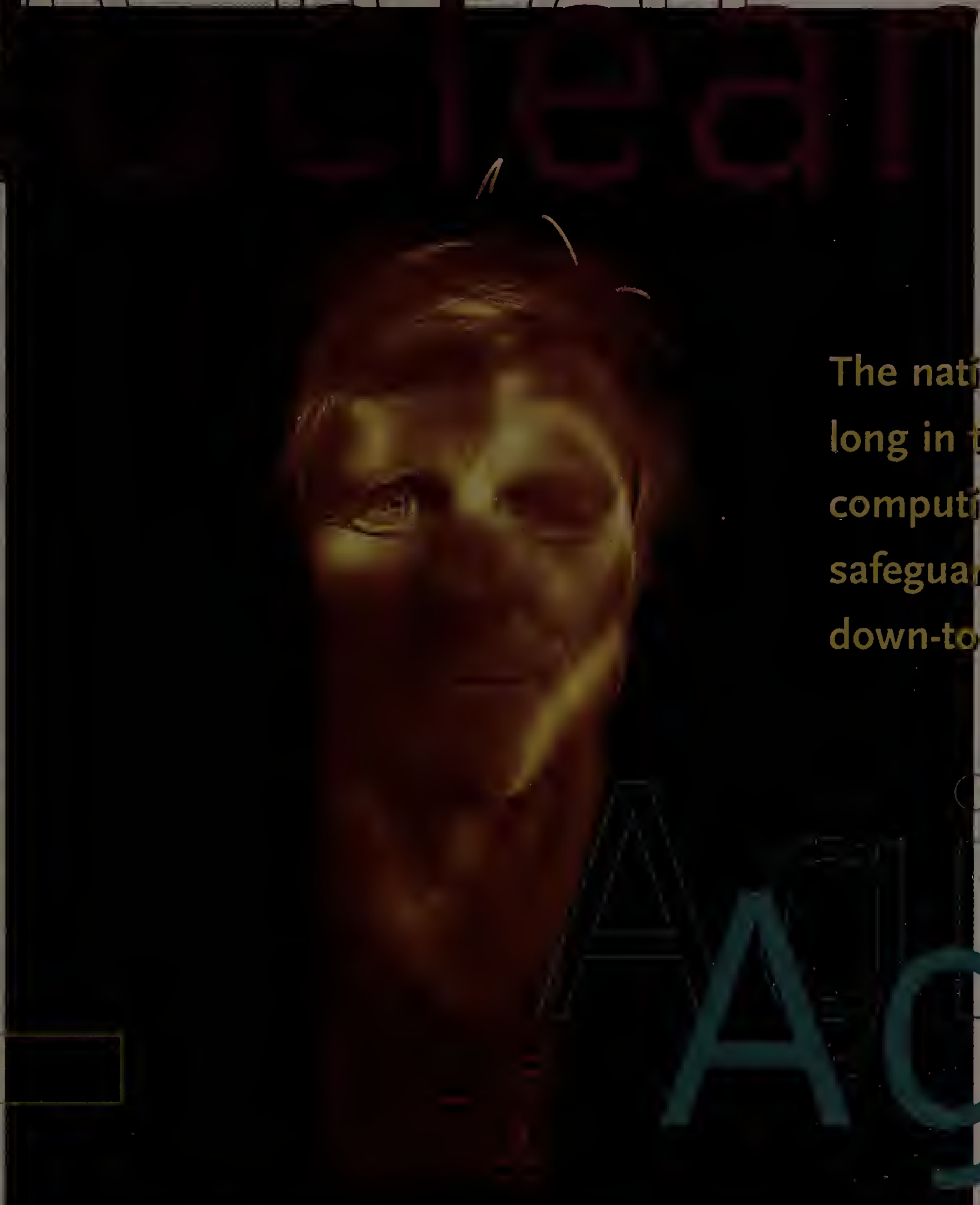
PRICE: $99 for new users, free upgrade from Java WorkShop 1.0

GRADES: Features: A, Ease of use: A.

Nuclear Aging

The nation's atom bombs are long in the tooth. A crash supercomputing project intended to safeguard them is yielding some down-to-earth benefits

By Gary H. Anthes



ADVANCED COMPUTING LAB'S ANDREW WHITE

CHIP SIMONS

They used to make nuclear weapons at these New Mexico labs. Now they're bombing Moore's Law.

Computer scientists at Sandia National Laboratories and Los Alamos National Laboratory have mounted an all-out assault on the frontiers of computing. The goal is to develop by 2004 supercomputers that can perform 100 trillion computations per second — 100 times faster than today's speediest machines.

Along the way, those scientists are developing software that is fundamentally changing the way science and engineering are done. And they are inventing techniques for software development, modeling, data mining, data storage, networking and other disciplines that are finding nontechnical, commercial applications.

The effort is called the Accelerated Strategic Computing Initiative (ASCI) and also involves Lawrence Livermore National Laboratory in Livermore, Calif. ASCI was created to replace nuclear weapons testing, which the U.S. ended in 1992, with computer simulation. The initiative's aim is to ensure the safety and reliability of the nation's aging atomic arsenal as part of the U.S. Department of Energy's Stockpile Stewardship and Management program.

Propelled by an annual budget that next year will be $517 million, ASCI is infused with a sense of urgency. By 2004, half the nuclear weapons designers in the U.S. will have left their jobs, and some weapons will be beyond their intended life spans, which generally don't exceed 12 years. The U.S. is the only nuclear power that isn't building new weapons, so scientists must find ways to extend the life of existing weapons and must greatly improve their ability to predict the performance and potential failures of those aging weapons.

Andrew White, director of the Advanced Computing Laboratory at Los Alamos, says one weapon simulation program there takes 500 hours to run on a supercomputer. The model would be satisfactory if its results could be verified by occasionally exploding a bomb underneath the Nevada desert. But without that validation, he says, the program will require such extensive enhancements that it will need 10,000 times more computer power, or close to 200 trillion floating-point operations per second (TFLOPS). "This is deadly serious — a matter of national security," White says. "We need to accelerate what's going on."

MORE THAN MOORE

For the labs to meet their schedule, they must triple the real performance of their computers every 18 months — 50% faster than is suggested by Moore's Law, which says the power of computer chips at a constant price doubles every 18 months. The acceleration is possible only by applying more processors to a problem, speeding interprocessor communications and using more efficient software, says Charles Slocomb, director of computing, information and

Nuclear Aging

CONTINUED FROM PAGE 83

communications at Los Alamos National Lab.

The labs' fastest supercomputers today are good for a bit more than 1 TFLOPS. The plan is to scale up to 10 TFLOPS by 2000, to 30 TFLOPS by 2001 and to 100 TFLOPS by 2004. The existing ASCI supercomputers are supplied by Intel Corp. at Sandia; Silicon Graphics, Inc./Cray Research at Los Alamos; and IBM at Lawrence Livermore.

To keep costs down and ensure continued availability, ASCI is buying mainstream, commercially available hardware and software when possible and is sponsoring development of items that are likely to find broad use in industry. "The paradigm is to develop with industry, then transfer to industry and buy back from industry," Slocomb says.

SANDY MONTOYA

BRIDGING THE GAP: A worker at Sandia National Laboratories inspects cables on an Intel teraflops supercomputer's "disconnect cabinet"

Progress on the application front is aided by collaboration with computer users in industry. The labs use a model that offers U.S. corporations and government agencies expertise in advanced computing disciplines, and the companies and agencies contribute funds and interesting problems to work on.

Indeed, one can learn about weapons by studying tires, say scientists at Sandia in Albuquerque. Goodyear Tire & Rubber Co. in Akron, Ohio, has contributed $46 million to Sandia in a technology sharing partnership that developed advanced software for modeling new tire designs. Sandia has learned how to better model the performance of polymers used in weapons, and Goodyear has learned how to make better tires, the parties say.

Loren Miller, director of tire performance modeling at Goodyear, says the high-performance modeling software couldn't have been obtained at any price from commercial sources. "It's been a significant breakthrough for us," he says. "We are talking about reducing [computer run] time from years to days."

And the Stockpile Stewardship program's dictate — that the performance of objects must be reliably predicted without physically testing them — is revolutionizing the way Goodyear develops tires, Miller says. The company previously built tire prototypes, tested them on a track, modified the design and repeated the process — often many times. Now computer models allow designers to bypass much of that physical prototyping and testing. Miller won't say how much time or cost has been cut from the tire development cycle. But he says major components of that effort — such as minimizing the rolling resistance of a tire — have been slashed by "substantially more than half."

National labs and companies are learning how to make computer models more realistic and more predictive by moving to "full physics" simulations. Those detailed models use enormous amounts of data and would have been impractical to run before the development of superefficient algorithms and faster hardware.

"We are accelerating the development of a discipline called simulation," says ASCI program head Gil Weigand, the Energy Department's deputy assistant secretary for strategic computing and simulation. "We believe this discipline will ultimately prevail in science on a par with experiment and theory."

WORK WITH THE POWER

The labs are pursuing several supercomputer architectures, but they all involve harnessing the power of many processors in parallel. The 100 TFLOPS behemoth is likely to have 10,000 processors, draw 10 to 20 megawatts of power and take up most of a new $125 million building, Slocomb says.

For years, the real performance of computers with many processors has lagged behind their theoretical performance. That's because they can be hard to program — application code has to be laboriously "parallelized" — and because of "latency," the nonproductive time it takes instructions and data to move between processors and memory.

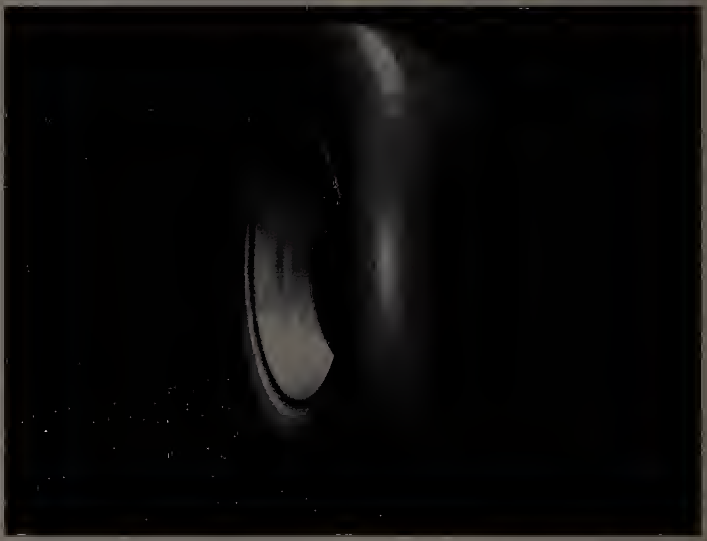
The labs are working hard on both problems as well as other software challenges. "It's the software, stupid — that's our mantra," says John Reynders, a senior project leader at Los Alamos, where 400 people are dedicated to computer science research.

Los Alamos is adding parallel constructs to the Common Object Request Broker Architecture — a standard for exchanging software objects.

It also has invented a framework for developing parallel applications called Parallel Object-Oriented Methods and Applications (POOMA).

POOMA is a C++ class library that offers a high-level programming interface and application-specific objects.

Hidden underneath is hardware-independent software that structures code for parallel computing by taking care of load balancing, message passing and multithreading.



THE RUBBER MEETS THE ROAD: A Sandia National Labs simulation of an auto tire's contact patch. Goodyear's Loren Miller calls the company's cooperative work with Sandia a "breakthrough"

LESS TIME, LESS EFFORT

"The key to POOMA is it uses objects that are 'parallel aware,' " Reynders says. Programmers who have no parallel computing knowledge can write serial code on a Linux-based laptop and easily port the application to the Intel, SGI/Cray or IBM parallel supercomputers, he says. A three-dimensional simulation program, written using POOMA in just six weeks, would have required four to five months without POOMA, Reynders says.

POOMA was developed to handle large-scale scientific problems but its concepts are suited for other complex applications such as those used on Wall Street to evaluate and price investments, Reynders says. One could just substitute different object classes on top of POOMA's lower layers, he says.

Center for Adaptive Systems Applications, Inc. (CASA), a company in Los Alamos started by refugees from the weapons lab, is applying techniques developed at the lab to mine multiterabyte databases.

The company has done fraud detection and consumer buying habit analysis for Citibank and other companies that use algorithms adapted from lab work in chemicals and astrophysics, says John Davies, president of CASA.

Indeed, the weapons-oriented research has surprising applicability in the non-defense world. The following applications were completed recently or are under development:

- ▸For the U.S. Health Care Financing Administration, Los Alamos developed a system to spot fraud in 2T bytes of claims data. Based on neural networks and other techniques, it can find new patterns of fraud not predefined by users.
- ▸Working with several government agencies, including the Los Angeles County Fire Department, Los Alamos developed a model to predict the spread of wildfires and to evaluate firefighting actions during a blaze.
- ▸Sandia developed VRaptor, a virtual reality-based simulation tool for training security and law enforcement officers on how to respond to terrorist attacks.
- ▸With other agencies, Los Alamos is developing climate prediction models to help understand the costs and benefits of complying with the recent Kyoto, Japan, carbon emissions accords.
- ▸Los Alamos has joined a "pandemic planning task force" and is working on a model to predict the spread of disease and to evaluate prevention strategies.

A nuclear weapon can have as many as 6,000 components. Using computer simulation to ensure the reliability and safety of these devices isn't a slam dunk, lab officials say. In fact, it may not work — period.

The task is extraordinarily hard because unlike more conventional simulations that take small steps into the unknown based on relatively small amounts of data, the stewardship program must be able to predict the future of immensely complex systems.

And the simulations no longer can be completely verified with experiments, yet they must be made ultratrustworthy.

"The year 2004 is a key date in the Stockpile Stewardship program," White says. "It's a watershed for whether you really can use modeling and simulation in a predictive sense." □

Anthes is Computerworld's *editor at large. His Internet address is gary_anthes@cw.com.*

IT Careers

Objects of Affection

Hiring managers are still smitten with object-oriented languages. Here are the ones they lust after most

WARREN GEBERT/LAUGHING STOCK

By Leslie Goff

Demand for object-oriented programming skills continues to grow, driven by the need for rapid application development and the cost-effectiveness and flexibility of reusable components. Of the five companies contacted for this article, four said that on a scale of 1 (little to none) to 5 (very high), demand for object-oriented programmers is between 4 and 5. Staff increases will range from 10% to 40% for people with object skills.

At each company, managers said salary is based on experience but conceded that object skills command a premium. They also view object training and experience as attractive attributes for new hires.

CW: What are the must-have, object programming skills you are hiring or training for?

MOREHOUSE: Design skills; we're using standard modeling with UML [universal modeling language], a derivative of works by pioneers in [object-oriented] programming.

KNIGHT: We're pretty neutral with respect to methods. UML is a standard that we're using internally, but we'll teach it. Particular notations and details aren't as important as a good grasp of [object] concepts in general. We don't want people who are using C++ as a better C, but who don't understand the object paradigm. We deal specifically with Smalltalk and Java, so we want people who are familiar with those specific languages.

RACHMIEL: We look for the specific technologies that we use here so we don't have a learning curve — Smalltalk, ParcPlace Variety, GemStone. On MVS, we use our own [object] dialect of PL1, so there's always a learning curve.

CW: What additional object-oriented skills can give a candidate an advantage?

MOREHOUSE: Our project is built solely in Java, but Java is a nice-to-have. The specific syntax of a language is something a skilled programmer can acquire if they have a lot of languages in their history. The jump from nonobject to object languages is the big one, so [object] experience is essential, but specific languages are just nice to have.

ECHOLS: Experience with [computer-aided software engineering] tools, like Select and Rational, because they're good for complete [object] analysis and design. Also, familiarity with CORBA [Common Object Request Broker Architecture].

KNIGHT: Experience interfacing with relational databases or with [graphical user interface] design in an [object] context.

CW: On top of object skills, what other skills do you look for?

DIDEHVAR: Exposure to quality assurance, so that when you couple them with a [quality assurance] team, they understand the importance of that to the project.

McINNIS: Database skills. And being able to make code that's testable — a clean design that's understandable and well-documented. If you can bring in a piece of code to the interview that's clear and that you can explain in a design review, I'll hire you 10 times out of 10.

CW: What specific types of object training or projects do you look for on a resume?

MOREHOUSE: We require experience in developing [object] software on a team; team experience is critical for our success. Our systems are too complicated for any one person to build. The days of one programmer/one project are gone. That's just the nature of software development now. Microsoft has raised the bar, and [end users] expect the same quality and number of features from in-house software as they expect from Word or Excel. [Object] techniques and languages make it possible to deliver these high-quality, high-features programs.

McINNIS: Training from the vendor of the language we use — Smalltalk. If they've taken a design course from ParcPlace, that's helpful because we know what the quality is.

KNIGHT: We look for people who are doing things that are real. If their resume says they've had a course in [object] Concepts and Design, they may not have implementation experience. So we'd look for some projects indicating that they had more than theory. I'm not a believer in separating out the lowly coders and the wise, benevolent systems analysts. Coders need to know how to design, and designer analysts need to know how to code.

CW: What is the next big thing in object programming?

MOREHOUSE: Distributed objects; making better use of things like CORBA.

RACHMIEL: Distributed objects; enabling [object] applications that live on both the server and client side; CORBA to the max using IIOP, [which is] the protocol to transfer and use objects across the Internet. Also, object databases, which are mutating right now into applications servers. Those are quality technologies, and I expect their use to increase. ☐

Goff is a freelance writer in New York.

The panelists

Kurt Morehouse
Principal consultant on the Targets KnowledgeBase team
R&D division IS
Glaxo Wellcome, Inc.
Research Triangle Park, N.C.

Samira Didehvar and Rod Echols
Didehvar is an application development manager;
Echols is a client/server manager and systems architect
The Weather Channel
Atlanta

Linda McInnis
Senior manager, quality assurance and documentation
Millennium Pharmaceuticals
Cambridge, Mass.

Alan Knight
Technical manager
The Object People, an object training and consulting firm that also markets an object-relational middleware package named TopLink
Raleigh, N.C.

Bill Rachmiel
Technology services manager
Brooklyn Union Gas
New York

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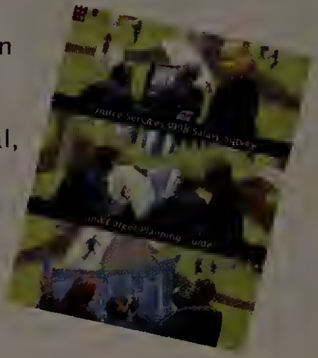

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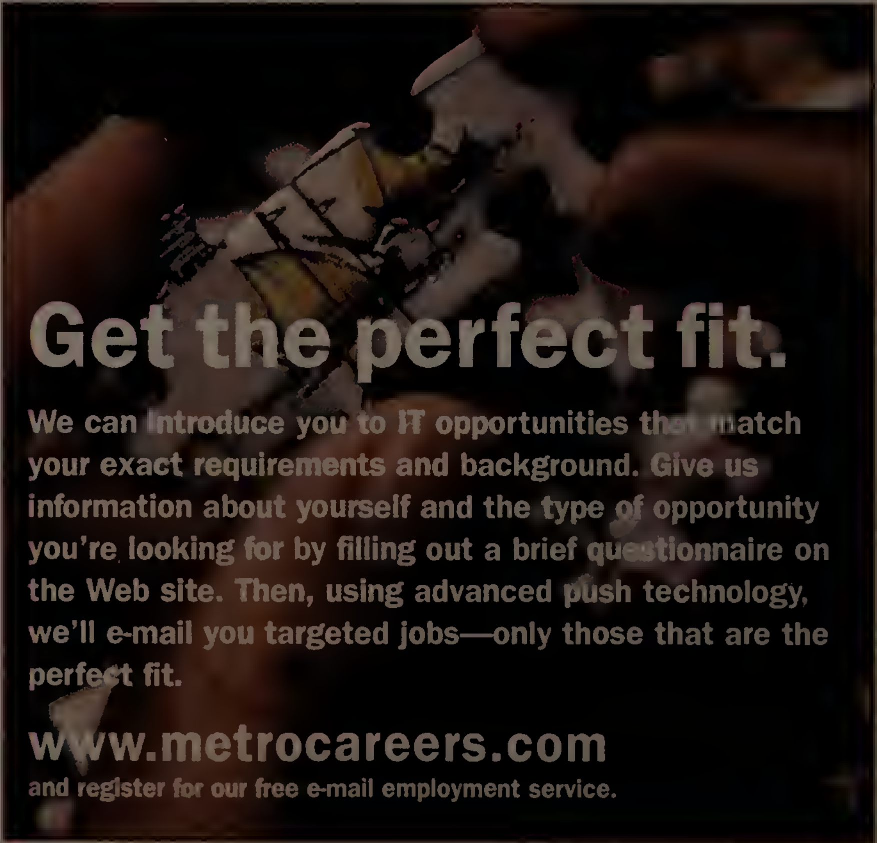

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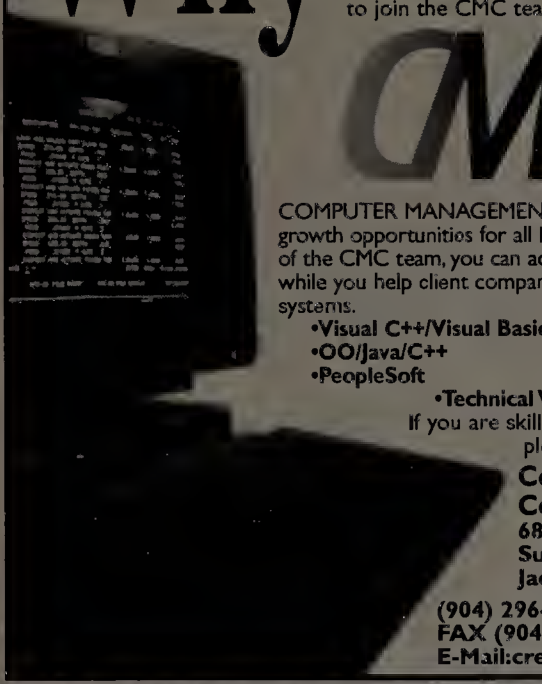

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Chief Information Officer

Fairfax County, Virginia needs a dynamic leader with the vision and skills to manage all aspects of information technology needed to support the County Government and citizens. As the agency head and primary operational manager of the Department of Information Technology, this position administers a $48 million budget, five divisions, and 242 employees. Reporting directly to the County Executive this position advises the Board of Supervisors and senior management on information technology and oversees day-to-day operations of computer system projects, data processing, operations and communications activities. Under the proposed County restructuring, the Department of Telecommunications (cable) Regulation and Consumer Services will report to the Chief Information Officer. In addition, the Fairfax County Public Library will have a reporting relationship through the Chief Infotmation Officer.

Salary is open within the established range, depending upon the qualifications of the person selected. This position is assigned to the County's exempt service and serves at the pleasure of the County Executive/Board of Supervisors.

Preferred Qualifications: Completion of a Bachelor's Degree (Master's Degree preferred) in Information Technology, Computer Science, Business Administration or related and ten years of increasingly responsible managerial expetience in applying information technology to meet the needs of a government or business organization (Some public sector experience preferred).

Experience managing multiple information technology functions such as systems analysis; integrating mainframe, microcomputer and LAN applications; data processing center operations; systems programming; telecommunications and data communications services; developing and maintaining systems architecture; developing organization-wide information technology policies; and data/database administration. Experience managing large information technology projects, both internal and contractor staffed. Experience developing strategic information system plans, developing return on investment methodology for information systems, and leveraging information technology to improve service delivery and cost effectiveness.

TO APPLY: Submit a resume and resume attachment form referencing JOB #98-9024, by 4/17/98 to: Fairfax County Application Center, 12000 Government Center Parkway, #170, Fairfax, VA 22035. For a recruitment profile containing additional details about this position or to obtain a resume attachment form, call 703/222-5872 OR tty 703/222-7314. EEO/Reasonable Accommodation.

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SOFTWARE ENGINEER to design, develop, test, implement, maintain and support software systems for various business applications using advanced programming and tools such as C, C++, HTML, OLTP, SOL/RDBMS, Embedded SOL, Informix/Sybase, Shell scripting (awk, sed, perl, Bourne, Korn), TCP/IP, UDP/IP, RPC, X.25, BSD sockets, Signals, Pipes, Message Queues, and SNA under Windows and UNIX platforms; Setup the development environment for the team, and mentor junior programmers. Require: M.S. degree in Computer Science with two years of experience in the job offered or as a Systems Analyst. Salary: $63,000 per year, 8 am to 5 pm, M-F. Send resume to: Neal Wilson, Manager, Security First Technologies, 3390 Peachtree Road, Suite 1700, Atlanta, GA 30326; Attn: Job PM

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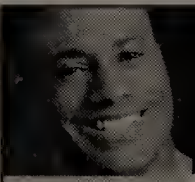

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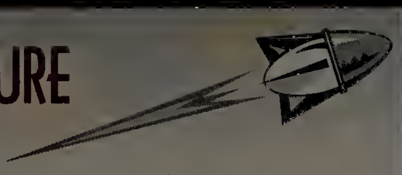

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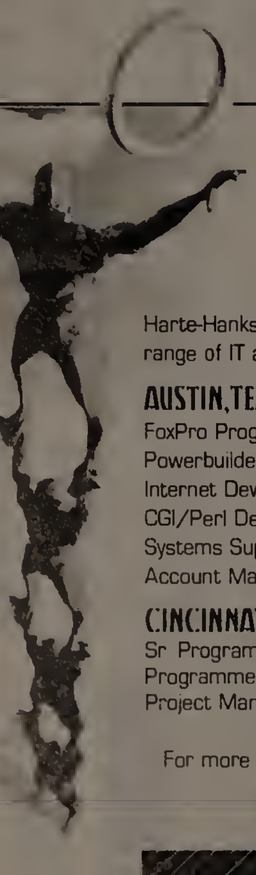

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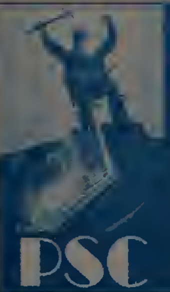

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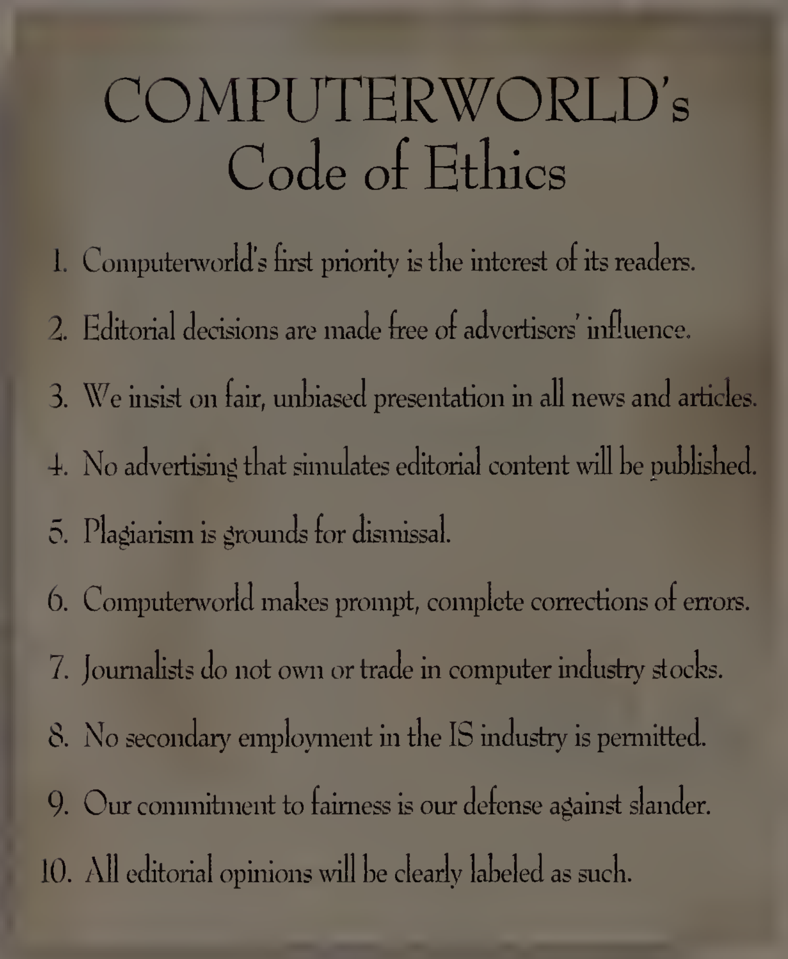

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Year 2000 glitches may be everywhere

▸ Phone infrastructure, medical devices at risk

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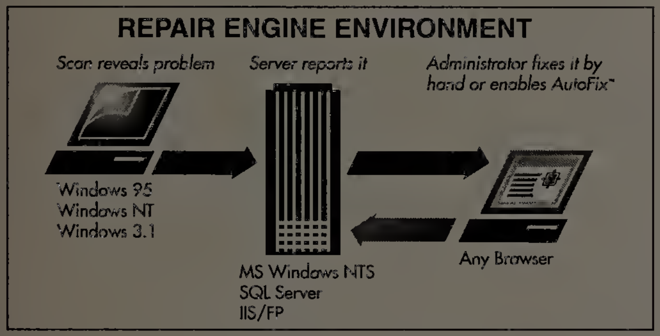

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QMS Inc.	23.0	Applix Inc.	-12.0
Cayenne Software Inc.	22.9	Ascend Communications	-11.3
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INDUSTRY ALMANAC

Tech stocks: Keep the faith

Ongoing speculation that technology stocks are overvalued and due for a massive correction was fueled when three major hardware vendors warned of worse-than-expected quarterly earnings. But analysts say it is still too soon to predict any widespread market meltdown.

"I think the whole stock market, not just the technology sector, is somewhat overvalued," says Wendy Abramowitz, an analyst at Argus Research in New York. She predicts more earnings warnings, but says they won't be exclusive to high tech. "My advice to anyone worried about overvaluation is to look for companies that aren't widely exposed internationally and that don't play in fiercely competitive markets," she says.

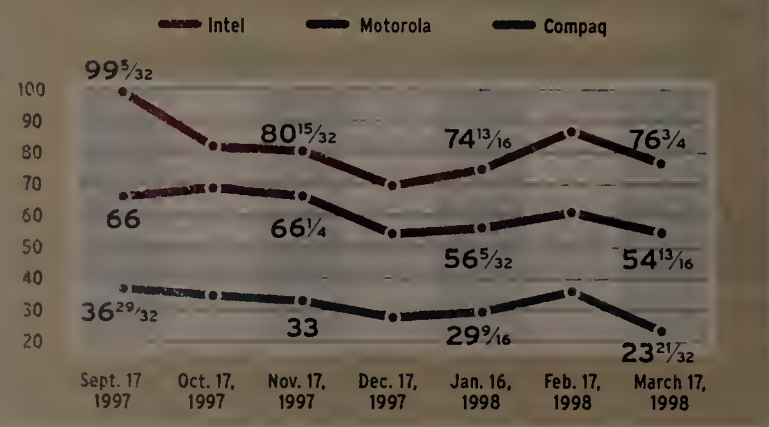
That's good advice: The latest three hardware casualties blamed price wars, slowing demand and weakened foreign currencies for their shortfalls. Santa Clara, Calif.-based Intel Corp. (Nasdaq:INTC) announced March 4 the likelihood of low quarterly earnings. Motorola, Inc. (Nasdaq:MOT) in Schaumburg, Ill., followed on March 5. And Compaq Computer Corp. (Nasdaq:CPQ) in Houston weighed in March 6. Share prices dropped on the trading day after each warning. Intel shares fell by 13%, Compaq shares dropped by 8% and Motorola shares fell by 5%.

In the past week, Intel and Motorola stocks have started to creep back up, but Compaq's stock has remained down.

Mike Murphy, an analyst at the "California Technology Stock Letter" in Half Moon Bay, Calif., says if user demand for hardware and communications equipment were to drop further in the next three months, investors could be in trouble. But he says he expects a rise of between 15% and 20% in user demand in the upcoming quarter. — Nancy Dillon

TEMPORARY DIP?

Earnings warnings have created anxiety, but analysts say the high-tech market is still on track



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ASND	60.00	22.00	Ascend Communications	31.81	-4.06	-11.3
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CSCO	68.50	30.19	Cisco Systems Inc.	63.88	-0.94	-1.4
CMNT	6.13	3.31	Computer Network Tech.	4.44	-0.38	-7.8
CNCX	20.38	7.88	Concentric Network Corp. (H)	19.19	0.50	2.7
DIGI	32.75	16.88	DSC Communications (L)	17.53	-0.84	-4.6
FORE	23.38	10.00	FORE Systems Inc.	14.75	0.00	0.0
GDC	9.50	3.25	General Datacomm Inds.	5.94	1.31	28.4
GSX	53.00	36.13	General Signal Networks	42.75	0.88	2.1
GTE	59.06	40.50	GTE Corp. (H)	59.06	3.31	5.9
LU	122.38	48.88	Lucent Tech. (H)	119.38	2.25	1.9
MADGF	10.00	3.25	Madge Networks NV	6.25	0.06	1.0
MCIC	50.38	27.31	MCI Commmunications Corp. (H)	50.38	3.50	7.5
NETM	5.25	2.09	NetManage Inc.	3.41	0.75	28.2
NTRX	3.13	0.63	Netrix Corp.	1.88	0.22	13.2
NCDI	14.50	5.88	Network Computing Devices	10.38	-1.25	-10.8
NWK	22.38	11.25	Network Equipment Tech.	15.50	-0.13	-0.8
NN	69.38	18.94	Newbridge Networks Corp.	27.44	-1.00	-3.5
NT	63.44	31.06	Northern Telecom Ltd. (H)	62.00	3.25	5.5
NOVL	11.13	6.28	Novell Inc.	10.19	-0.19	-1.8
ODSI	16.50	5.19	Optical Data Systems Inc.	5.88	-0.06	-1.1
PCTL	14.88	5.63	Picturetel Corp.	6.75	-0.13	-1.8
PTON	3.50	0.97	Proteon Inc.	1.41	0.06	4.7
RACO	3.88	1.00	Racotek Inc.	3.13	0.06	2.0
RADS	29.38	7.00	Radiant Systems Inc	22.88	2.81	14.0
RETX	7.63	3.38	Retix	4.88	-0.03	-0.6
SBC	44.00	24.63	SBC Communications (H)	44.00	4.06	10.2
SFA	24.94	14.00	Scientific Atlanta Inc.	19.81	0.25	1.3
SHVA	16.44	8.06	Shiva Corp.	10.13	-1.88	-15.6
FON	74.56	42.25	Sprint Corp. (H)	74.56	5.88	8.6
QWST	41.06	13.19	QWest Communications (H)	40.38	0.88	2.2
SMSC	18.13	8.00	Standard Microsystems Corp.	9.63	0.81	9.2
USW	55.88	31.13	U S West Inc. (H)	55.88	1.81	3.4
XIRC	18.75	7.50	Xircom	12.94	0.00	0.0
XYLN	26.38	12.38	Xylan Corp.	24.25	-0.38	-1.5
PCs and Workstations						**OFF -2.0%**
AAPL	29.56	12.75	Apple Computer Inc.	26.38	-0.69	-2.5
CPQ	39.75	14.25	Compaq Computer Corp.	23.38	-1.94	-7.7
DELL	71.94	15.19	Dell Computer Corp.	63.19	-0.50	-0.8
GTW	46.25	19.38	Gateway 2000 Inc.	41.50	-0.75	-1.8
HWP	72.94	48.13	Hewlett Packard Co.	62.50	0.50	0.8
MUEI	25.38	8.44	Micron International Inc.	11.69	-0.31	-2.6
NIPNY	74.00	48.63	NEC America	52.25	-1.50	-2.8
SGI	30.31	10.94	Silicon Graphics	13.94	0.13	0.9
SUNW	53.31	25.88	Sun Microsystems Inc.	43.31	-0.75	-1.7
Large Systems						**OFF -2.0%**
DGN	37.94	13.38	Data General Corp.	17.00	-1.50	-8.1
DEC	62.63	25.00	Digital Equipment Corp.	48.38	-2.44	-4.8
IBM	113.50	63.63	IBM	101.94	2.25	2.3
MDCD	5.75	2.88	Meridian Data Inc.	3.69	0.31	9.3
NCR	43.38	25.63	NCR Corp	32.88	-0.81	-2.4
PRCM	18.63	7.00	ProCom Technology, Inc.	8.75	0.00	0.0
SQNT	31.25	14.50	Sequent Computer Sys.	18.31	-1.25	-6.4
TEXM	6.00	2.19	Texas Micro Inc	3.69	-0.13	-3.3
SRA	60.75	28.75	Stratus Computer Inc.	42.88	-1.81	-4.1
UIS	20.19	5.75	Unisys Corp. (H)	19.50	-0.50	-2.5
Software						**UP 2.0%**
ADBE	53.13	33.50	Adobe Systems Inc.	43.31	-1.13	-2.5
AMSWA	15.63	5.38	American Software Inc.	7.31	0.00	0.0
APLX	12.50	3.13	Applix Inc.	5.50	-0.75	-12.0
ARSW	53.25	17.00	Arbor Software	45.66	-0.16	-0.3
ARDT	14.94	5.88	Ardent Software (H)	14.94	2.06	16.0
ARSC	32.50	17.75	Aris Corp.	26.38	-1.38	-5.0
ADSK	51.13	28.88	Autodesk Inc.	47.38	1.13	2.4
BGSS	45.50	27.50	BGS Systems Inc.	44.25	-0.31	-0.7
BMCS	82.75	39.63	BMC Software Inc.	78.06	-2.44	-3.0
BOOL	38.50	19.63	Boole and Babbage	35.38	-0.19	-0.5
BORL	12.19	5.88	Borland Int l Inc.	9.09	-0.22	-2.3
BOBJY	16.75	6.63	Business Objects (H)	16.00	0.19	1.2
CAYN	4.63	0.94	Cayenne Software Inc.	2.69	0.50	22.9
CNTR	4.50	0.87	Centura Software (L)	1.81	0.13	7.4
CHKPF	50.50	16.25	Checkpoint Software	41.38	4.75	13.0
COGNF	35.00	17.63	Cognos Inc.	27.38	0.88	3.3
CA	58.63	24.88	Computer Associates	52.81	-0.44	-0.8
CPWR	48.00	14.63	Compuware Corp. (H)	47.00	1.13	2.5
CSRE	14.88	4.25	Comshare Inc.	7.56	-0.69	-8.3
COSFF	7.13	1.40	Corel Corp.	2.06	-0.09	-4.3
DWTI	5.38	2.13	Dataware Technologies Inc.	3.75	-0.06	-1.6
FILE	43.06	9.50	Filenet Corp. (H)	43.06	4.56	11.9
FRTE	26.25	4.94	Forte Software	6.50	0.00	0.0
FTPS	6.88	1.50	FTP Software Inc.	3.06	0.81	36.1
GPSI	35.50	20.38	Great Plains Software, Inc	32.00	2.00	6.7
HUMCF	54.25	22.00	Hummingbird Comm. Ltd.	34.19	-2.00	-5.5
HYSW	46.00	13.00	Hyperion Software Corp.	39.53	-1.22	-3.0
IRIC	20.00	11.75	Information Resources	15.69	1.50	10.6
IFMX	17.63	4.00	Informix Corp.	8.31	-0.13	-1.5
INGR	14.19	6.25	Intergraph Corp.	9.06	-0.31	-3.3
LEAF	4.00	0.81	Interleaf Inc.	3.06	0.38	14.0
ISLI	21.25	6.25	Intersolv Inc.	17.00	2.13	14.3
INTU	53.25	21.25	Intuit Inc.	46.00	-2.75	-5.6
JDEC	40.63	24.88	J.D. Edwards Co.	33.63	2.00	6.3
TLC	21.44	5.50	Learning Co. (The) (H)	21.44	0.25	1.2
LGWX	13.94	4.13	Logic Works (H)	12.56	0.56	4.7
MAPS	14.25	7.88	MapInfo Corp.	12.75	0.25	2.0
MATH	4.63	2.19	MathSoft	3.44	0.41	13.4
MENT	13.13	6.50	Mentor Graphics	10.09	-0.34	-3.3
MIFGY	60.63	19.13	Micro Focus	52.50	-2.50	-4.5
MGXI	11.88	4.50	Micrografx Inc	11.25	-0.13	-1.1
MSFT	86.00	43.75	Microsoft Corp	81.56	-0.75	-0.9
OBJS	2.38	0.44	ObjectShare, Inc.	2.19	0.06	2.9
OMTL	15.00	8.25	Omtool Ltd	12.88	1.56	13.8
ORCL	42.13	17.75	Oracle Corp.	28.88	-0.81	-2.7
PMTC	34.88	18.75	Parametric Technology (H)	32.94	-1.13	-3.3
PSFT	53.38	15.31	Peoplesoft (H)	49.44	-2.81	-5.4
PTEC	18.38	11.00	Phoenix Technologies	11.94	-1.00	-7.7
PSQL	22.75	6.50	Platinum Software (H)	22.75	2.81	14.1
PLAT	31.13	10.25	Platinum Technology	23.06	-3.44	-13.0
PRGS	31.00	14.38	Progress Software Corp (H)	29.81	1.81	6.5
RNBO	30.00	13.75	Rainbow Technologies Inc.	25.38	1.13	4.6
REDB	16.88	5.00	Red Brick Systems Inc.	6.38	0.06	1.0
ROSS	5.94	1.75	Ross Systems, Inc	3.06	0.00	0.0
SAPE	46.50	15.00	Sapient Corp	42.13	0.63	1.5
SCOC	7.25	3.13	SCO Inc	4.69	0.38	7.4
SDTI	44.38	21.00	Security Dynamics Tech.	39.88	4.88	13.9
SOTA	22.25	8.88	State of the Art	21.78	0.03	0.1
SSW	56.75	27.38	Sterling Software Inc. (H)	55.81	-0.38	-0.7
SDRC	30.00	15.25	Struct. Dynamics Research	25.13	-1.44	-5.4
SYBS	23.63	6.88	Sybase Inc.	9.38	-0.88	-8.5
SYMC	28.94	12.00	Symantec Corp. (H)	27.50	1.13	4.3
SNPS	47.13	21.75	SynOpsys	29.94	-1.81	-5.7
SSAX	17.63	3.88	System Software Assoc.	8.31	0.63	8.1
SYSF	14.50	3.00	Systemsoft Corp.	3.78	-0.09	-2.4
BAANF	49.75	20.00	The Baan Co. (H)	49.75	4.69	10.4
TRUV	5.19	1.50	Truevision Corp.	2.03	-0.03	-1.5
VSIO	48.13	18.13	Visio Corp.	40.44	0.13	0.3
WALK	20.00	10.50	Walker Interactive Systems (H)	20.00	0.38	1.9
WALL	29.13	11.31	Wall Data Inc.	15.13	-0.50	-3.2
WANG	30.56	16.00	Wang Laboratories Inc.	30.56	1.69	5.8
Internet						**OFF [illegible]**
AMZN	88.25	15.75	Amazon.com	83.63	3.63	4.5
AOL	65.88	19.31	America On-Line (H)	62.75	-0.69	-1.1
ATHM	38.13	16.63	At Home Corp.	32.63	-3.00	-8.4
EDFY	22.13	8.88	Edify Corp.	19.00	-0.38	-1.9
XCIT	59.25	7.50	Excite, Inc.	49.50	-0.44	-0.9
SEEK	22.88	4.38	Infoseek Corp.	18.50	-1.38	-6.9
LCOS	48.75	11.19	Lycos Inc.	44.63	2.38	5.6
NSCP	49.50	14.88	Netscape Comm. Corp.	19.19	-0.75	-3.8
NSOL	29.38	11.75	Network Solution Inc (H)	27.63	0.88	3.3
OMKT	19.75	6.50	Open Market Inc.	18.63	-0.19	-1.0
PEGS	27.13	12.50	Pegasus Systems	23.13	-1.63	-6.6
PSIX	11.13	4.25	PSINet (H)	9.88	-0.56	-5.4
QDEK	3.50	1.19	Quarterdeck Corp.	2.03	0.00	0.0
SCUR	14.81	4.75	Secure Computing Corp.	14.44	2.50	20.9
SPYG	12.00	4.06	Spyglass Inc.	7.88	-0.94	-10.6
YHOO	92.38	15.13	Yahoo! Inc.	83.88	0.00	0.0
Semiconductors						**OFF [illegible]**
AMD	45.75	17.13	Advanced Micro Devices	23.00	1.13	5.1
ADI	36.69	21.00	Analog Devices Inc.	32.75	-1.94	-5.6
CRUS	17.75	8.00	Cirrus Logic	10.56	0.25	2.4
CY	18.94	7.38	Cypress Semiconductor Corp.	8.44	-0.25	-2.9
INTC	102.00	62.88	Intel Corp.	75.69	-1.25	-1.6
LSCC	74.50	39.75	Lattice Semiconductor	50.38	-1.00	-1.9
LSI	46.88	18.63	LSI Logic Corp.	22.25	-0.69	-3.0
MCRL	46.88	13.00	Micrel Semiconductor Inc.	39.38	3.13	8.6
MU	60.06	22.00	Micron Technology	30.69	-2.81	-8.4
MOT	90.50	52.00	Motorola Inc.	54.19	-2.69	-4.7
NSM	42.88	19.50	National Semiconductor (L)	19.75	-0.63	-3.1
RMBS	86.75	26.88	Rambus Inc	40.75	-2.13	-5.0
TXN	71.25	35.81	Texas Instruments	53.50	-1.06	-1.9
VLSI	38.69	16.38	VLSI Technology	17.44	-0.69	-3.8
XLNX	58.50	28.50	Xilinx	40.06	-5.94	-12.9
Peripherals and Subsytems						**UP 3.[illegible]**
ADPT	54.25	19.50	Adaptec Inc.	22.31	-1.19	-5.1
APCC	34.38	15.25	American Power Conversion	27.75	-1.19	-4.1
CREAF	29.38	8.63	Creative Technology Ltd.	22.00	-0.38	-1.7
RACE	16.75	2.13	Data Race Inc.	2.56	0.00	0.0
DTM	12.00	7.88	Dataram Corp.	12.00	1.25	11.6
EMC	39.25	15.88	EMC Corp.	37.19	-0.69	-1.8
EMLX	21.25	10.00	Emulex Corp.	11.63	0.75	6.9
ESCC	35.88	22.13	Evans and Sutherland	30.75	2.25	7.9
EXBT	16.50	5.63	Exabyte	9.13	0.88	10.6
IISLF	1.94	0.94	Intelligent Info. Systems	1.00	0.00	0.0
IOM	16.75	6.88	Iomega Corp. (L)	7.19	-1.50	-17.3
IPLS	2.81	0.94	IPL Systems Inc.	1.94	-0.13	-6.1
KMAG	35.38	11.75	Komag Inc.	14.63	0.50	3.5
MTSI	34.88	13.00	Micro Touch Systems Inc.	17.19	0.44	2.6
MTIC	17.88	3.50	MTI Technology Corp.	14.88	0.25	1.7
AQM	23.06	2.25	QMS Inc.	4.69	0.88	23.0
QNTM	43.25	16.88	Quantum Corp.	20.38	-1.50	-6.9
RDUS	8.13	1.88	Radius Inc.	2.94	0.44	17.5
SEG	54.25	17.75	Seagate Technology	23.69	0.31	1.3
SOS	16.63	5.00	Storage Computer Corp.	7.81	2.31	42.0
STK	74.69	33.25	Storage Technology (H)	73.88	3.50	5.0
TEK	48.19	32.25	Tektronix Inc. (H)	47.31	0.13	0.3
WDC	54.75	14.50	Western Digital Corp.	16.81	-0.38	2.2
XRX	98.25	54.75	Xerox Corp. (H)	97.06	2.19	2.3
Services						**UP [illegible]**
AMSY	30.00	17.63	American Mgmt. Systems	28.50	0.50	1.8
ANLY	36.50	14.19	Analysts Int l	33.00	-0.69	-2.0
AUD	69.56	26.56	Auto Data Processing (H)	69.56	4.19	6.4
CATP	50.50	21.25	Cambridge Tech. Partners (H)	49.63	0.00	0.0
CEN	54.00	29.50	Ceridian Corp. (H)	54.00	4.75	9.6
CDO	42.88	18.38	Comdisco Inc. (H)	42.88	1.50	3.6
CPU	38.00	15.50	CompUSA Inc.	27.88	-1.19	-4.1
CHRZ	53.50	17.75	Computer Horizons	49.50	-0.44	-0.9
CSC	113.50	57.88	Computer Sciences	107.31	6.25	6.2
TSK	49.38	16.63	Computer Task Group	40.13	0.00	0.0
EGGS	12.75	3.63	Egghead Discount Software	10.44	-1.06	-9.2
EDS	50.75	29.56	Electronic Data Systems (H)	50.75	4.06	8.7
ICO	39.63	19.75	Inacom Corp.	28.19	-3.31	-10.5
INEL	7.50	2.25	Intelligent Electronics	7.06	0.00	0.0
KEA	49.81	14.63	Keane Inc. (H)	49.81	3.56	7.7
MICA	29.75	10.06	Microage Inc.	12.25	-1.31	-9.7
PAYX	56.13	25.63	Paychex (H)	54.88	0.75	1.4
PMS	80.00	41.50	Policy Management Sys. (H)	77.75	4.38	6.0
REY	28.13	13.75	Reynolds and Reynolds	21.19	0.06	0.3
SCBI	22.25	10.69	SCB Computer Tech. Inc	19.50	1.00	5.4
SEIC	69.00	18.75	SEI Corp. (H)	65.25	-1.25	-1.9
SMS	78.50	36.75	Shared Medical Systems (H)	78.13	4.06	5.5
SSPE	24.25	10.00	Software Spectrum Inc	21.41	0.84	4.1
SDS	35.13	20.75	Sungard Data Systems	33.81	0.31	0.9
VST	17.25	6.50	VanStar Corp.	13.06	-0.06	-0.5

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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How to contact Computerworld

TELEPHONE/FAX

Main phone number ....(508) 879-0700
All editors unless otherwise noted below
Main fax number ....(508) 875-8931
24-hour news tip line..................(508) 820-8555

E-MAIL

Our Web address is www.computerworld.com. All staff members can be reached via E-mail on the Internet using the form:

firstname_lastname@cw.com.

All IDG News Service correspondents can be reached using the form:

firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:

letters@cw.com.

Please include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,
Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Phone ....(800) 552-4431
E-mail ....circulation@cw.com
Back Issues.................................(508) 820-8129

REPRINTS/PERMISSIONS

Phone..................Michelle Olk, (800) 217-7874

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

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Executive Editor	Maryfran Johnson (508) 820-8179

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National Correspondent

IT services, systems integration, outsourcing	Julia King (610) 532-7599

Senior Editors/News

Groupware, E-mail, messaging	Barb Cole-Gomolski (760) 728-8858
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Databases	Craig Stedman (508) 820-8120
Midrange hardware, Unix, mainframes	Jaikumar Vijayan (508) 820-8220
Internetworking	Bob Wallace (508) 820-8214

Senior Writers/News

@Computerworld	Stewart Deck (508) 820-8155
Mobile computing, help desk	Kim Girard (650) 548-5515
PCs, servers, net computers, Windows	April Jacobs (508) 820-8121
@Computerworld	Patrick Thibodeau (508) 820-8143

Staff Writers/News

New products, multimedia, storage	Nancy Dillon (415) 548-5538
Telecommunications, federal government	Matt Hamblen (508) 820-8567
Client/server software, Unix applications	Randy Weston (508) 628-4869
@Computerworld	Tom Diederich (650) 548-5581

Opinions

Columns Editor	Steve Ulfelder (508) 620-7745
Staff Columnist	Frank Hayes (503) 252-0100

Department Editor/Features

Managing	Allan E. Alter (508) 620-7714
Technology reviews/ Review Center	James Connolly (508) 820-8144

Senior Editors/Features

Editor at large	Gary H. Anthes (202) 347-0134
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Managing	Rick Saia (508) 820-8118

Research

Bob Fink, senior research manager (508) 820-8116; Laura Hunt, research analyst; Keith Shaw, graphics coordinator; Mari Keefe, online researcher.

Copy Desk

Ellen Fanning, managing editor (508) 820-8174; Roberta Fusaro, assistant managing editor; Jamie Eckle, David Ramel, senior copy editors; Michelle Davidson, senior production copy editor; Deborah Brown, Pat Hyde, Adam Parez, Monica Sambataro, copy editors; Jeremy Selwyn, online copy editor.

Graphic Design

Tom Monahan, design director (508) 820-8218; Janell Genovese, associate art director/features; Mitchell J. Hayes, associate art director/news; David Waugh, associate art director/online; Nancy Kowal, senior graphic designer; Carol Lieb, photo researcher/editor; Alice Goldberg-FitzHugh, Amira Harari, April O'Connor, graphic designers; Rich Tennant, John Klossner, cartoonists.

Administrative Support

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan, editorial assistants, (415) 548-5563.

Computerworld Magazines Group

(Includes Premier 100, Campus Edition, Best Places to Work, Leadership Series, Intranet Series, Emmerce and Health Care Journal.)
Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCrorey, Joyce Chutchian-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Mary Beth Welch, art director.

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Contact: Johanna Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

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JavaOne rollout fills gaps

▸ *Java-based tools expected to help ease, decrease development time*

By Sharon Gaudin
San Francisco

JAVAONE CONFERENCE

CORPORATE USERS looking for new Java-based software frameworks, tools and component should keep an eye on JavaOne this week.

Sun Microsystems, Inc.'s annual user bash is expected to showcase a slew of new products, primarily aimed at speeding development time and building simple communications connections.

Sun won't announce its long-awaited HotSpot Java Virtual Machine this week. HotSpot has been put off for summer beta and year-end release and is being designed to make Java's applications run as fast as those built with industry powerhouse C++. HotSpot was slated to be out in beta this quarter and released in the summer.

But here is what users can expect to surface at the show:

- Sun is slated to make several announcements, including the long-awaited official release of JavaStation, its network computer. The machine has been hanging in prerelease status for more than a year.

Alongside the JavaStation release will come JavaOS, Sun's Java-based operating system, which is pared down to be lightweight enough for network computers.

- Sun also is expected to announce a family of software components — electronic building blocks called JavaBeans, which are meant to simplify application development. JavaBeans can be dropped into an application to add a prebuilt function, such as inventory processing or billing management, without writing the coding for it.
- IBM and several other vendors will announce a mobile network computer reference profile with guidelines for prospective hardware makers. Guidelines include specifications for dial-up connections, synchronizing data and files upon reconnection to the network, and locating compatible devices on a network from a remote location.

IBM PLANS

- IBM, a leading player among Java's major industry backers, will also show off the second version of its San Francisco Project, a framework designed to speed the development of server-side Java applications.

A framework is the electronic plumbing that handles communication and transaction connections, so coding to do the same doesn't have to be built in to each application. Frameworks generally are thought to save users anywhere from 50% to 70% of development time.

- IBM also is expected to come out with new Java-based transaction processing software as well as upgrades to its VisualAge for Java tool.
- Hewlett-Packard Co. will talk about its embedded virtual machine, which will run Java applications on small devices or appliances, such as personal digital assistants or VCRs (see News Shorts, page 12).
- Forte Software, Inc. is set to release Forte Application Environment, a distributed Internet application development tool. The environment integrates platform-independent Common Object Request Broker Architecture with Microsoft Corp.'s Windows-specific Distributed Component Object Model. That will allow users to connect systems that run the two different technologies and run them as one.
- Symantec Corp. will release Version 2.5 of its Visual Cafe for Java Professional Developer Edition and Database Developer Edition. With about 21% of the market, Visual Cafe for Java is the second most popular Java tool. ☐

Java suite to cut costs

CONTINUED FROM COVER 1

"It's going to cost less money using this suite, and it will get your work done faster," Kinz said. He said the suite includes tools not yet included in many industry mainstay C++ development environments. "Right now, Java's maturity is mostly there. This is a big step."

The 100% Pure Java suite will include an application modeler, a database access tool, a code repository and an object-oriented framework. Additional frameworks, geared for vertical markets, are expected to be added later this year.

PICK ANY JAVA TOOL

And the Java suite isn't partial to any particular vendor. It was designed to work openly with any Java development tool, including Borland International, Inc.'s JBuilder, Symantec Corp.'s Visual Cafe for Java and IBM's VisualAge for Java.

But a Sun spokesman said it may not support Microsoft Corp.'s Visual J++, a tool that doesn't fully support the standard Java Development Kit (JDK)

"Improving our development time means we can make more applications, and that's related to how much money we can make for Xerox," said Terry Light, manager of engineering operations at Xerox Corp. in Rochester, N.Y. "This suite could be phenomenal for us. If it works, we would convert more and more of our applications over to Java because it saves us that much time."

STEVE BORNS

"One of the big problems developing with Java is that we haven't had the tools like we do with C++."

– Kevin Perry,
Red Storm Entertainment

The announcement comes two weeks after Java rival Microsoft dropped a bomb on the industry by announcing that the latest version of its Java development tool, Visual J++, won't build cross-platform Java code.

According to industry observers, Java backers need to keep up the cross-platform momentum before Microsoft splits the Java move down the middle.

"It's about time Sun gets its act together and quits bashing Microsoft and gives us some tools," said an assistant vice president at one of the country's top five banks, who asked to remain anonymous. "If they want developers to use their Java, they've got to have the tools."

The application modeler was designed to map out the applications in the system on both the server and client sides, said Jonathan Schwartz, director of product marketing for JavaSoft, Sun's Java-focused division.

He added that the database tool, designed to automate database access and cut out a good chunk of coding, previously was known as JavaBlend. It has been retooled and will be renamed.

The code repository is an online library of programming code. It was designed to help teams of developers working remotely stay up-to-date with one another, sharing work and information.

"One of the big problems developing with Java is that we haven't had the tools like we do with C++," said Kevin Perry, a producer at Red Storm Entertainment, a games company in Research Triangle Park, N.C. "Java is easier to code in, but most of that time savings was eaten up because we don't have the tools. This should help us recoup those man-hour losses. And quicker production time translates into lower production costs."

Also at the Java conference, Sun is expected to show off its Java Foundation Classes, its latest just-in-time compiler, and features of JDK 1.2. The kit has been updated to fix some platform compatibility problems.

"Businesses live and die by how fast they can respond to customer needs," the banking vice president said. "If these changes can help me put programs out there faster, that's going to directly help my business." ☐

Netscape kit integrates applications

By Carol Sliwa

NETSCAPE Communications Corp. this week will announce a new version of a tool kit for integrating companies' enterprise applications with Internet, intranet and extranet applications designed for Netscape's Application Server software.

Extension Builder 2.1 is expected to be widely available in May for Solaris and Windows NT.

With Netscape's Extension Builder 2.1, developers can write custom extensions that will make enterprise applications such as enterprise resource planning and proprietary back-end applications work with Netscape's Application Server and other vendors' middleware products. The extensions can be built in Java or C++.

Extension Builder 2.1 is expected to be widely available in May for Sun Microsystems, Inc. Solaris and Microsoft Corp. Windows NT platforms. It will cost $4,995 per processor.

ALSO BREWING

Netscape also will announce this week that its Application Server will support Sun's Enterprise JavaBeans 1.0 specification.

Applications running on Netscape's Application Server will be able to interoperate with Enterprise JavaBean-compatible products and services.

But that support won't be available until the next major release of Netscape's Application Builder and Application Server in the second half of this year, a Netscape official said.

In another Java-related announcement, Netscape this week plans to launch a World Wide Web site for Java components.

The Center for Java Software, which will be an extension to Netscape's Netcenter online service, will offer Java applets as well as JavaBean components from Netscape and other companies.

More than 100 products will be available for purchase, sources said. ☐

WinHEC to explore 64-bit computing

By April Jacobs

ADVANCING THE PC platform to 64-bit computing and reducing corporate cost of ownership will be the twin peaks at the Windows Hardware Engineering Conference (WinHEC) this week in Orlando, Fla.

Users will hear a lot about Intel- and Windows-based 64-bit computing; Windows 98 and Windows NT 5.0; and hardware that expands the PC into multiple forms.

Microsoft Corp. Chairman and CEO Bill Gates will address several topics in his keynote speech, including moving the PC into new arenas such as PC/TV, next-generation imaging and home networking, and clustering technologies.

Microsoft also will call on hardware makers to drop their support for the Industry Standard Architecture (ISA) bus, which originally was part of the company's PC 98 specification. The PC 98 specification provides architecture guidelines for PCs released this year.

"If you take a look at bus speed and performance, removing ISA makes sense because managing an ISA board is too difficult," said John Dunkle, president of Workgroup Strategic Services, Inc. in Portsmouth, N.H.

Microsoft also will talk about PC 99 specifications such as the ability to use Digital Video Disc drives instead of CD-ROM drives. That would give users increased storage capacity and better sound and video quality.

The following also will be on the WinHEC agenda:

- Microsoft will discuss moves it plans to make in the PC manageability arena, including preboot execution capabilities, hardware instrumentation, World Wide Web-based management and network-based wake-up functionality for Windows NT.
- A presentation about the first OnNow PCs, which are expected to ship within several weeks. Details may include how hardware makers will support Microsoft's Advanced Configuration and Power Management Interface, which was designed to allow remote troubleshooting and management.
- A rundown on how to choose among Windows CE, Windows 98 and Windows NT on the client. That has been a source of user confusion in the past year. □

Lawsuit raises red flag for IT training

CONTINUED FROM COVER 1

ham, Mass.-based research firm International Data Corp. (IDC).

But IT managers need to temper their desperation to quickly get new workers up to speed with a reasoned approach to the training services they are buying. That includes understanding what type of training the provider offers so they don't expect to see new recruits come out as seasoned Java programmers, for example.

"Technical training is now too mission-critical. If someone screws it up, it could hurt your business," said Christianne Moretti, an analyst at IDC.

On March 10, the Illinois attorney general filed a lawsuit against Computer Learning Centers, Inc. for defrauding students at its Schaumberg, Ill., facility.

Alleged violations include failing to provide proper facilities, materials and computer equipment and misrepresenting classroom size, transferability of college credits and starting salary expectations. Penalties could range from pulling the firm's license in the state to a $50,000 fine for each violation to restitution for all affected students.

Officials at the Fairfax, Va., company didn't return calls. And investigators have received more than a dozen additional student complaints since the suit was filed, said Lori Corrall, a spokeswoman for the Illinois Attorney General Office.

COMMON NEED

With the boom in the training market, "I am sort of surprised something like that hasn't happened sooner," said Naomi Karten, a training consultant in Randolph, Mass. "I suspect there are more than a few companies who are having problems like this, with training not meeting their expectations."

That's why training associations, analysts such as Karten and users interviewed by *Computerworld* recommend that information systems and business managers take the following steps before handing over training to an outside firm:

- Sample at least three classes to determine quality of content and instructors.
- Check turnover rates; many trainers leave for more lucrative jobs.
- Get a referral list and ask clients what they would change about the training if they could.
- Ask to see certifications.
- Ask software vendors for a list of certified trainers.

Some providers go so far as to promise that students will pass specific certification tests. Mastering Computers, Inc. in Phoenix provides that guarantee for graduates of its Microsoft Corp. certification preparation course.

For students who don't pass, the firm will provide the training again for free or offer free passes, worth $80 each, to retake the test.

"Other courses were way too fast and expensive," said Mike Orther, a Windows NT administrator at Codeline, Inc., a filtering equipment manufacturer in Escondido, Calif.

He previously took three classes from other vendors and failed the Microsoft certification test. But he passed with flying colors after hooking up with Mastering Computers, which he said provided a much more thorough approach.

Crestar Bank in Richmond, Va., puts training firms through an elaborate proposal process that includes instructor presentations from the vendor, ratings of teacher quality, reference checks, classroom facilities tours and breadth of training locations, said Mary-Ellen Winks, the banks corporate training manager.

Training firms must move from being simple certificate factories to being complete service organizations that can centrally administer widespread training and help clients translate training results to business gains, Moretti said.

For example, Liz Claiborne, Inc. signed on with New Horizons Computer Learning Centers, Inc. for its worldwide training efforts, partly because of the Santa Barbara, Calif., firm's major accounts program.

That means Liz Claiborne has a way to track the progress of all its employees globally and knows that they will get the same type and level of training. Previously, the apparel maker had to map employee training based on the different methods of vendors around the world.

To make it easier for companies such as Liz Claiborne to track training from different vendors, training organizations are working on basic certification methods from trainers (see story at left). □

NO PAIN, NO GAIN

- IS spent 9.8% of its overall budget on staff training last year
- IS spent $6,200 on each staff member for technical training last year
- 80% of IS training budgets is spent on outside technical training, up from 66% in 1994

Source: 1997 Survey of Education Buyers' Needs and Requirements, International Data Corp., Framingham, Mass.

FAQs: Certificate programs

Q: ***Which groups are preparing new trainer certifications?***

A: The International Association of IT Trainers in Columbia, Md., is readying a software instructor certification program for delivery at the end of the year, said Dave Murphy, the group's membership director. The International Technical Trainers Association (ITTA) in Austin, Texas, is promoting the new Certified Technical Trainer (CTT) program.

Q: ***What is different about the CTT program?***

A: The CTT focuses on trainers' fundamental teaching abilities, not just their technical and product knowledge, said Doug Upchurch, ITTA's executive director. It is also vendor-neutral, so no software company has a say in how the certification is conducted. Most major software firms accept the certification for their product training courses, but the CTT is still new enough that only a few trainers have certification, Upchurch said.

Q: ***What skills does CTT require?***

A: Trainers go through delivery skill workshops and get personally coached on their progress. Skills include using different instructional methods, gaining student interest, reading the audience and summarizing major technical points of a presentation.

— Tim Ouellette

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Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0385697. Computerworld (ISSN 0010-4841) is published weekly: except a single combined issue for the last week in December and the first week in January by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1997 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), if the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints (minimum 100 copies) and permission to reprint may be purchased from Michelle Olk, Computerworld Reprints, c/o Reprint Services, 315 Fifth Ave. Northwest, St. Paul, Minn. 55112, (800) 217-7874. Fax: (612) 633-1862. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $3 a copy: U.S. — $48 a year; Canada — $110 a year; Central & So. America — $150 (surface) a year; Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

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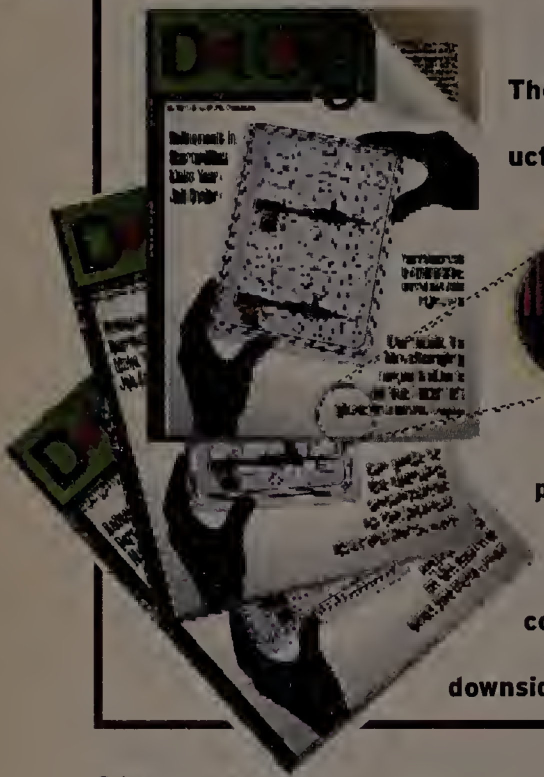
Dispatches & Images from the Fringes of the Electronic Frontier

INVISIBLE BAR CODES



The ubiquitous bar code is great for identifying products, but it takes up valuable space and looks awful on otherwise elegant packaging. So Eastman Chemical in Kingsport, Tenn., is making the bar code invisible with ink that contains "near-infrared fluorophores." The compounds can be read by certain laser scanners but are invisible to the naked eye, so the code can be printed over text and graphics. One downside: The ink eventually fades from exposure to light.

Obscureware

Can't find a crucial nugget in your bit bucket of E-mail? The "Whew!" search utility from WordCruncher Publishing (*www.wordcruncher.com*) can find single words, lists of words and phrases. It costs $9.95.

JStreet Mailer, a Java-based E-mail program from InnoVal Systems Solutions (*www.innoval.com*), has a "multiple personas" feature that lets users customize messages with different signature lines for different recipients. No longer should users accidentally send E-mail to business associates with a closing that reads, "Love, Dad."

Dallas Semiconductor and Resource 800 (*www.resource800.com/dfast.html*) have co-developed a year 2000-compliant plug-in chip that replaces the clock chip in about 75 million PCs so they will work in the next century. An early user: The U.S. Nuclear Regulatory Commission.

Mystery users test Web sites

Want a consumer evaluation of your Web site? NPD Online's "mystery shoppers" (*www.npd.com*) will tally their likes and dislikes in a SiteSurfer report. It costs $5,000 to $15,000.

Giant mouse as big as a Volkswagen Beetle

At The Computer Museum in Boston, the most hands-on part of the popular Walk-Through Computer exhibit has taken quite a beating since its introduction in 1990. So San Mateo, Calif.-based Kensington Technology recently upgraded the huge trackball input device with a sleeker housing, better lighting and a new roller assembly that makes the 4-foot ball easier to move.

KENSINGTON
Expert Mouse

The Computer Museum's 1-ton trackball works with a 108-sq.-ft. color monitor

Inside Lines

Forget *Beach Blanket Bingo*

Finding IT recruits was the hot game last week in Fort Lauderdale, Fla., where thousands of college students — and potential future employees — were basking in the sunshine over spring break. Unisys dispatched recruiters directly to the beach. The big challenge, quipped one Unisys executive, was finding students sober enough to talk about their futures.

Cuttin' those old mainframe access costs

Cisco this week will announce an add-on device that lets companies use their Cisco 7200 series routers to provide LAN and WAN access to mainframes running Internet Protocol and/or IBM SNA applications. The 7200 was designed to be an inexpensive alternative to front-end processors, 3172 controllers or gateways to access mainframes. It will ship in the third quarter for $8,500.

Darts anyone?

Fed up with spam? Consider a visit to *www.cyberpromo.org*, a Web site that offers you a chance to throw electronic darts at self-proclaimed spam king Sanford Wallace. It won't stop spam, but it might make you feel better. If you want a more serious approach, check out *www.cauce.org*, the Web site for the Coalition Against Unsolicited Commercial E-mail.

Dionne Warwick, millennium maven?

During his keynote speech at last week's Software Productivity Group year 2000 conference in New York, consultant Peter de Jager had this to say about the FAA's plans to replace 40 IBM 3083 mainframes by November 1999: "I don't have to be a member of the *Psychic Friends Network* to say, 'They will be late.' "

Pass the chips

Intel is rumored to be readying a chip-set rollout for April 15. The Santa Clara, Calif., chip giant is supposedly rolling out test systems to beta users March 31 for a final review of its Intel BX (Nightshade) chip, with release scheduled for shortly after. Products should hit the streets in June.

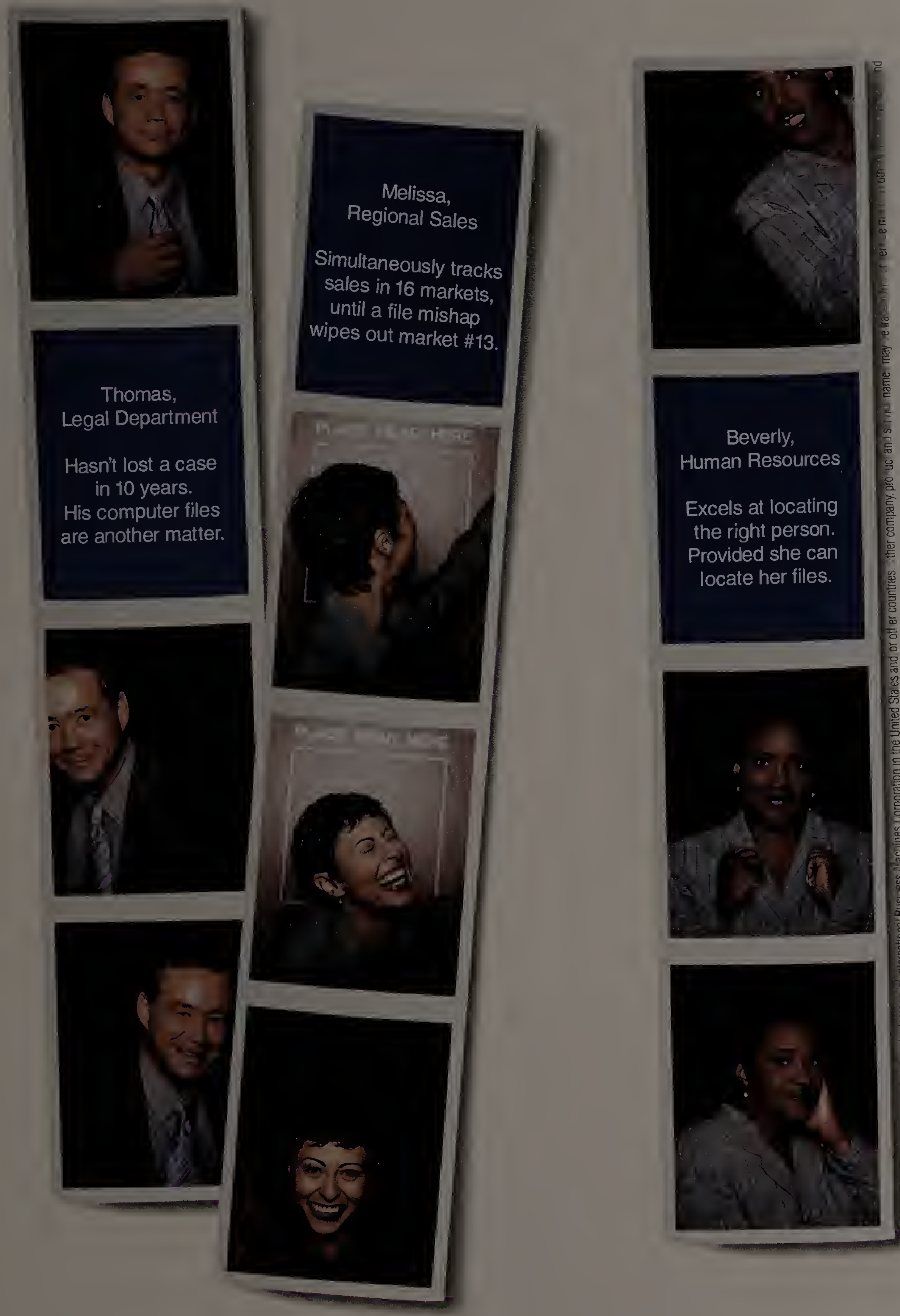
Drowning out the noise

Never let it be said that Microsoft misses an opportunity to thwart its competition. Novell's Brainshare conference kicks off in Salt Lake City this week, showcasing its NetWare 5.0 Beta 3 releases with enhanced features in the Active Directory. But late last week Microsoft product managers were busy calling reporters to convince them of the superiority of the forthcoming Active Directory in NT 5.0, which won't ship until next year. "We thought we'd do a little spin control in advance," said Jonathan Perrera, a Microsoft product manager. Just one little thing, Jon: Where's the product?

New storage options for NT

Storage Technology will unveil its entry into the server-ready, open systems storage market this week. The line of products, called the OpenStorage family, will include a new RAID that supports Windows NT and Unix attachments using Ultra SCSI or Fibre Channel connectivity. The OpenStorage Library for secondary open systems storage will be based on DLT 4000 and DLT 7000 tape technology. Users can buy an interlocking system that incorporates 90G bytes of RAID and 360G bytes of tape for $85,000.

Push technology got such a bad rap after the initial wave of hysteria over the Internet technology petered out that many of the surviving vendors now categorically deny that they sell push products. Executives at Marimba, one of the early push pacesetters, insist that push isn't really what the company's technology is all about. Diffusion and DataChannel also shy away from being lumped into the push fraternity. . . . But don't worry about us thinking you're pushy if you've got any news tips or quips to share. You can get in touch with Computerworld *by E-mailing news editor Patricia Keefe at patricia_keefe@cw.com or giving her a ring at (508) 820-8183.*



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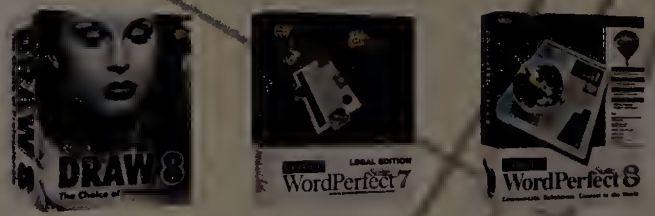

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